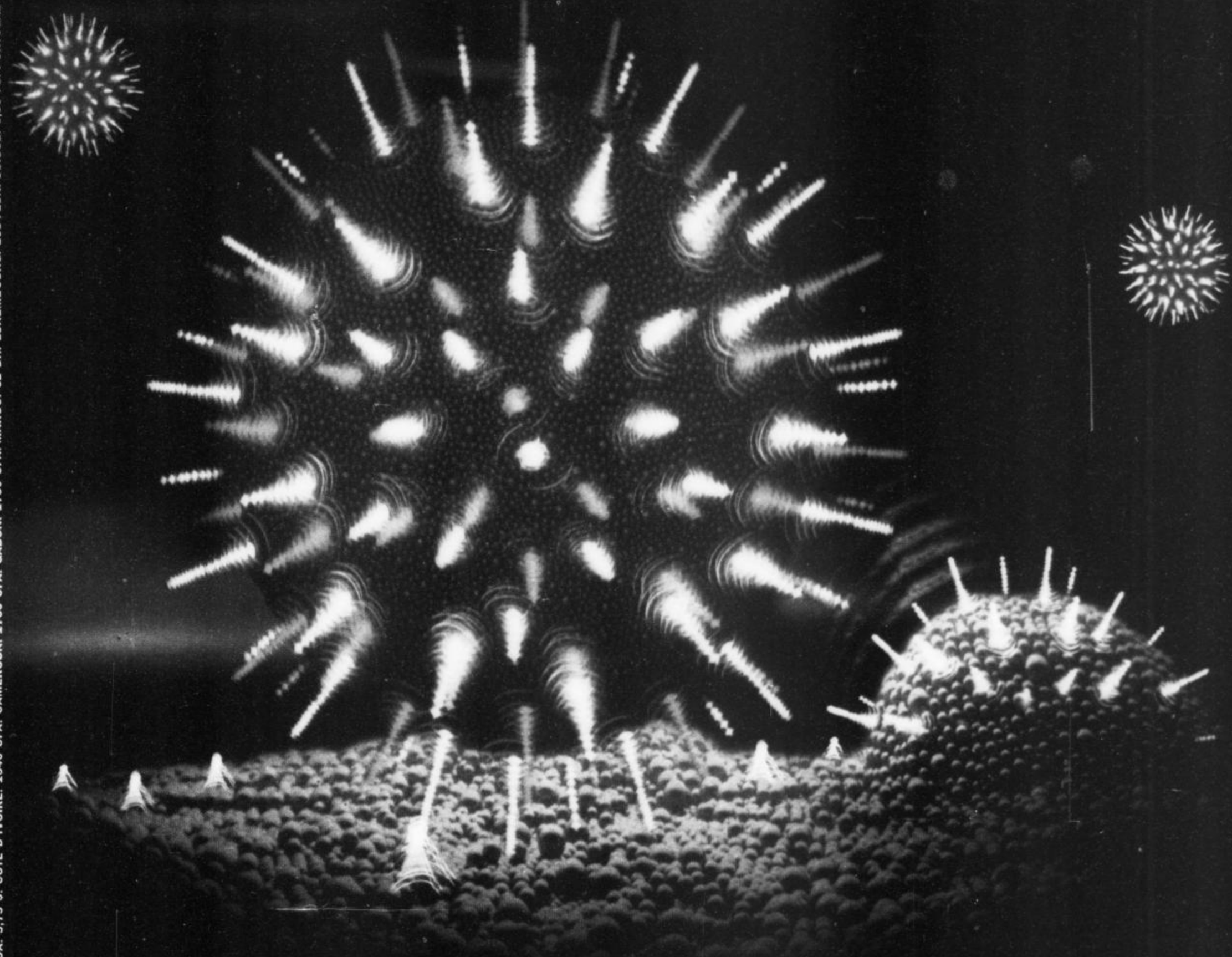
JUNE 1995

THE UNESCO COURIER

AIDS
a worldwide emergency



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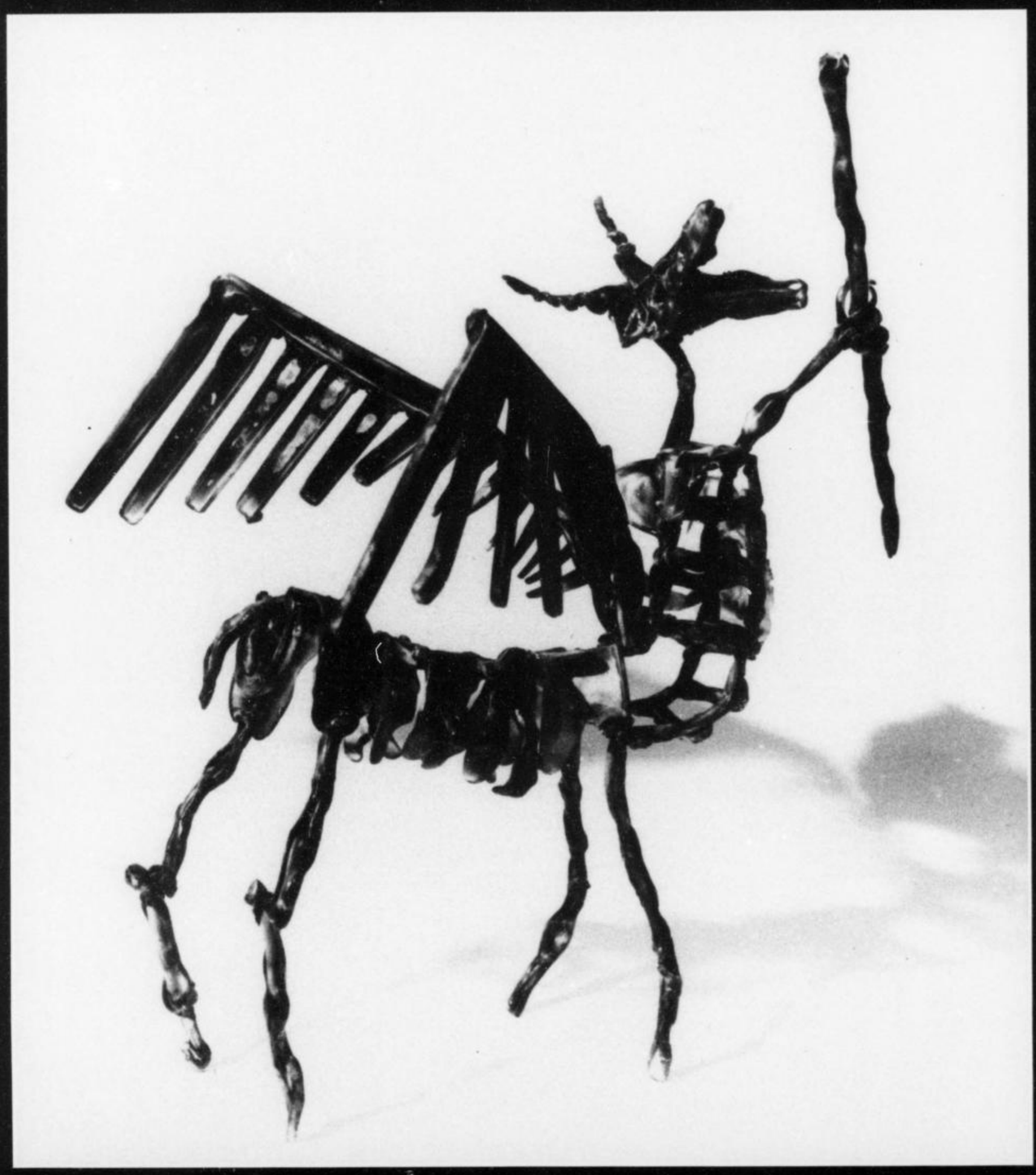
INTERVIEW WITH NICOLAE BREBAN

HERITAGE: SUSAH, PEARL OF THE TUNISIAN SAHEL

E N C O U N T E R S

We invite readers to send us photographs to be considered for publication in this feature. Your photo should show a painting, a sculpture, piece of architecture or any other subject which seems to be an example of cross-fertilization between cultures. Alternatively, you could send us pictures of two works from different cultural backgrounds in which you see some striking connection or resemblance. Please add a short caption to all photographs.



The Aids hippogriff

1989, sculpture
(35 x 30 x 25 cm)
by Sigismond de Vajay

"I try to express my solidarity with the world's suffering through my sculptures," writes the young Swiss artist Sigismond de Vajay. When creating his hippogriff—a legendary monster of Greek mythology—by melting plastic cutlery over a flame, he was haunted by the bull in Picasso's famous painting, *Guernica*. "I model my sculptures while the plastic is still hot," he says, "and have often left the skin of my fingers stuck to it." He notes that "This century's wars have raged between East and West, but today's afflictions such as Aids and drugs spread along a North-South axis. Shall we be able to overcome them?"

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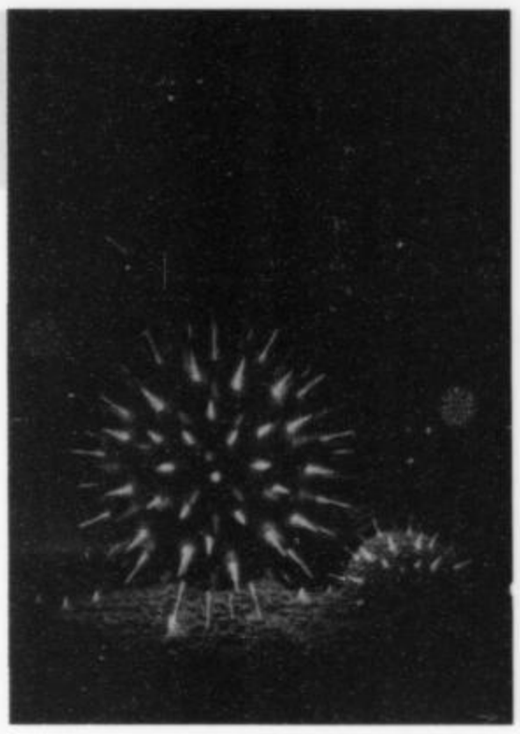

Cover: Computer-generated image of the human immunodeficiency virus (HIV).

Right, a red ribbon, international symbol of the fight against Aids.

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A WORLDWIDE EMERGENCY

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THE UNESCO COURIER

48th year
Published monthly in 30 languages and in Braille

"The Governments of the States parties to this Constitution on behalf of their peoples declare,
"that since wars begin in the minds of men, it is in the minds of men that the defences of peace must be constructed . . .
"that a peace based exclusively upon the political and economic arrangements of governments would not be a peace which could secure the unanimous, lasting and sincere support of the peoples of the world, and that the peace must therefore be founded, if it is not to fail, upon the intellectual and moral solidarity of mankind.
"For these reasons, the States parties . . . are agreed and determined to develop and to increase the means of communication between their peoples and to employ these means for the purposes of mutual understanding and a truer and more perfect knowledge of each other's lives. . . ."

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Editorial

The human immunodeficiency virus strikes at children and adults, at rich and poor, at blacks and whites, in both North and South. Like pollution, it knows no frontiers. It is a danger for us all, and no country, however well endowed in specialized scientific resources or in institutions, can tackle it alone. Humanity must unite to defeat it.

Many have already fought against the disease, in the United Nations system, in national teams working on a professional or voluntary basis, in local associations and movements. Thanks to them, considerable progress has been made on a number of fronts—research, care and prevention.

Progress has been made, but it is not enough. Because of its far-reaching human implications and its impact on economic and social life, Aids has acquired a multidimensional quality which is not yet fully appreciated. It is increasing the already vast differences between countries and hindering the development efforts of the poorest of them. It is highlighting the effects of ignorance and extreme poverty and the flagrant inequalities of our world in the areas of health, information and education.

In view of the nature of the pandemic, the difficulty of the problems associated with it and the need for better co-ordinated action at the international level, the United Nations has decided to set up a joint HIV/Aids programme. Under this programme, Unesco will be working alongside the World Health Organization, the United Nations Children's Fund, the World Bank, the United Nations Development Programme and the United Nations Population Fund.

Exchanging information and changing behaviour

Unesco will draw on the experience it has built up, notably through its preventive education programme, not only in order to pass on information but also to bring about changes

by Federico Mayor

Aids: a worldwide emergency

in people's behaviour with regard to Aids both as a disease and as a social phenomenon.

Since action to provide information and establish communication is effective only if it is adapted to the socio-cultural environment in which it is carried out, UNESCO will make available to its partners the benefits of its research and experience on that pervasive and elusive factor which is cultural specificity.

UNESCO will also continue to assist research through its various networks concerned with molecular and cell biology and microbiology, and through the World Foundation for Aids Research and Prevention that Professor Luc Montagnier and I set up at the beginning of 1993. Our first concern is to develop exchanges of information and co-operation among researchers in all the disciplines involved and to promote the participation of specialists from the countries hardest hit, especially African specialists.

International mobilization

UNESCO's task also involves—perhaps most importantly—preventing or checking, with the agreement of the communities concerned, any measures—including legislative ones—that would tend to exclude or discriminate against people who are suffering from the disease or are HIV-positive, or to violate human rights and fundamental freedoms or the dignity of the human person. This is vital for the preservation of the "intellectual and moral solidarity of mankind".

Aids is clearly not just a medical problem. It underlines the interdependence of our world and the need for an interdisciplinary strategy implemented with the close co-operation of all concerned. The international mobilization needed for this cannot be confined to action by the United Nations system.

It must be backed by states and their political leaders, since the aim is the rational organization of efforts and funding. Within each country, those in charge of health and also of the economy, finance, and education have a crucial role to play in fighting the scourge. They will have to encourage practical preventive action and make all aspects of Aids an integral part of their policies and development projects.

The resources available for combating this great collective threat are limited, particularly when compared with the resources of all kinds devoted to defence. In our budgets we have funds to pay the price of war, but we have made no provision for the cost of the fight against Aids, malaria, pollution or ignorance, i.e. the cost of peace. The transition from a culture of war to a culture of peace must be speeded up.

International action would stand little chance of success unless it was supported by the mobilization of everyone in civil society: non-governmental organizations, foundations, associations and the private sector. Only solidarity in its most elementary sense—that which binds together the representatives of a species in the face of a common foe—will enable us, through an alliance of science and wisdom, to overcome both the medical epidemic and the social, cultural, economic, political and ethical offensive that Aids has unleashed on humanity. ■

The great Italian tenor Luciano Pavarotti (centre) offers his support to the World Foundation for Aids Research and Prevention, created in 1993 by Professor Luc Montagnier of the Pasteur Institute, Paris (at left in photo) and Mr. Federico Mayor, Director-General of UNESCO (right).

From HIV to Aids

by Robin Weiss

Is the human immunodeficiency virus (HIV) the result of germ warfare, genetic manipulation or monkey cell cultures? Is HIV really the cause of Aids?

The human immunodeficiency virus (HIV) is a new virus to humankind. Actually, there are two main types of the virus: HIV-1 is responsible for the worldwide pandemic of Aids; HIV-2, which can also cause Aids, occurs mainly in West Africa but is now spreading rapidly in some Asian countries such as India. There is evidence from stored blood samples that HIV first started to spread epidemically in the late 1970s, but Aids was not recognized as a distinct new disease until 1981.

Regrettably, although HIV and Aids are new, they are here to stay. HIV belongs to the family of retroviruses, in which the viral genes become inserted into our own genetic material in the chromosomes. Because HIV establishes long-term, persistent infection in this way there is no possibility of eradicating Aids, as the World Health Organization succeeded in doing with smallpox in 1977 and may achieve for poliomyelitis by the turn of the century.

When we are faced with such an appalling catastrophe as Aids, it is tempting to look for someone or some organization to blame for the situation. The world is not short of "conspiracy theories" on the origin of HIV—that it arose from germ-warfare research, from new genetic engineering technology or from growing the polio vaccine in monkey kidney cells. None of these fanciful, exciting ideas holds up to what we know about HIV, and its origin in humans may be much more mundane.

HIV-1 is related to a virus found in some chimpanzees and HIV-2 is even closer to a virus occurring naturally in sooty mangabey monkeys in West Africa. Thus it seems likely that HIV originally transferred from these animals to humans (a process called zoonosis), although HIV has now become a human-to-human infection.

Turning into Aids

HIV-1 is a usually fatal infection, whereas some people infected with HIV-2 get Aids and others remain well. HIV-1 actually kills a higher proportion of the people it infects than smallpox ever did, but unlike smallpox, the incubation period takes years, not days. During these years of relatively good health, the HIV-infected person may pass the virus on to others through sexual intercourse, from mother-to-child or via blood contamination. On average it takes about nine years to develop Aids in western countries though some infected people succumb to Aids much more quickly, and others have survived over fifteen years. In developing countries progression to Aids may occur two to three years earlier. During the long incubation period, HIV is active, particularly in the lymph glands. Yet it takes time to cause severe disease because the body has considerable reserves of the immune system to call upon which only slowly become exhausted owing to HIV infection.

A few investigators have queried whether HIV really is the cause of Aids, blaming lifestyle, especially drugs, instead. However the evidence for HIV's causing Aids has now become overwhelming. Quite simply, wherever

Aids occurs, HIV has preceded it. HIV-negative people do not develop Aids, although there are some rare inherited or acquired immunodeficiencies that might occasionally be mistaken for Aids.

The only factor common to Aids, for example, in young adults in Africa, teenage girls in the sex bars of southeast Asia, homosexual men in North America, haemophiliacs in Europe or Japan and injecting drug-users in South America is HIV. Moreover, those infants who acquired HIV from their mothers die of Aids while those who escape the virus, even if their mothers have it, remain healthy.

Thus HIV is both necessary and sufficient to cause Aids. Yet many "co-factors" influence the speed at which Aids develops in the infected person. These co-factors include individual genetic make-up, age at the time of infection (older people tend to develop Aids quicker), nutrition, life-style including drug abuse and exposure to other infections.

Opposite page, schematic illustration of the structure of a retro-virus such as HIV-1. At centre are strands (red) of genetic material consisting of ribonucleic acid (RNA) enclosed in a core protein shell (green). The outer envelope (yellow) consists of a lipid bi-layer with protein spikes (orange). In HIV the spikes consist of glycoprotein gp120. They recognize CD4 markers on white blood T-cells, causing the cells to become infected. The virus kills T-cells after infection, damaging the human immune system.

How does HIV cause Aids?

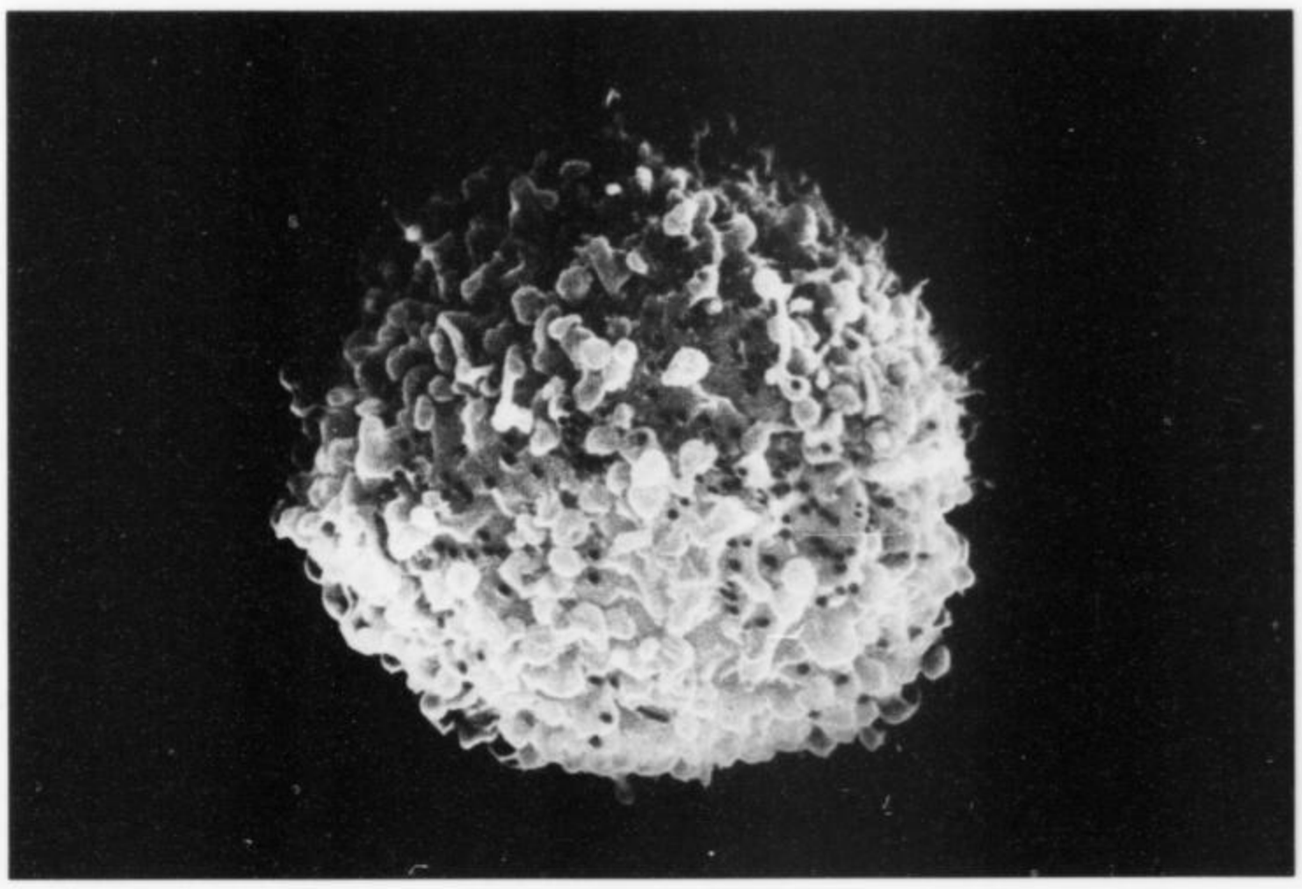
There are four main attributes to Aids, namely, immune deficiency, tumours, wasting disease and brain disease.

(a) Immune deficiency. HIV infects cells of the immune system, especially a certain type of white blood cell, and also scavenger cells in the tissue known as macrophages. It infects the cells by docking onto the CD4 molecule on the surface of these cells and gaining entry into the cells in this way. CD4 cells are crucial for other lymphocytes that make antibodies or kill cells infected by other germs. If there are not sufficient CD4 cells in the blood and body tissues, then the immune system cannot work properly, and the body becomes susceptible to all sorts of other infections as a result of this immune deficiency. That is why the fatal illnesses in Aids are usually secondary infections by microbes other than HIV, because HIV has led to the depletion of CD4 cells, and the other microbes only then have the opportunity to grow. Hence they are called opportunistic infections. These opportunistic infections include well-known disease-causing germs such as the tuberculosis bacterium, which cause much more widely spread and severe infections in HIV-infected people. However, opportunistic infections also include microbes such as *Pneumocystis carinii*, which is quite harmless in healthy people but causes a fatal pneumonia in Aids.

*"I waver between states of great anxiety and calm. Sometimes this has helped me to fight. I talk myself into believing that when treatment finally becomes effective I'll actually slip through the net."**

(b) Tumours. Only a few kinds of cancer are common in Aids, particularly lymphoma and Kaposi's Sarcoma. The same kinds of tumour sometimes appear in other immune deficient conditions, such as patients with organ transplants who are deliberately immuno-suppressed so that they do not reject their transplants. These tumours are probably themselves caused by viruses. They can be regarded as opportunistic cancers in the sense that a healthy immune system would prevent them from developing. Thus their appearance is akin to opportunistic infections.

(c) Wasting disease. Many Aids patients lose weight drastically and become emaciated. That is why Aids was often called "slim" disease when it first began to spread in Africa. The wasting away of body fat and muscle is another effect of HIV infection. It is partly due to poor



A false-colour scanning electron micrograph of a T-lymphocyte infected with HIV. An infected T-cell typically has a lumpy appearance with irregular, rounded surface protrusions. The tiny spherical virus particles (coloured in green) on the surface are in the process of budding away from the cell membrane. This intensive reproduction of the virus leads to the destruction of the host cell. Depletion of the population of T4 lymphocytes through HIV infection is the main reason for the destruction of a person's immune system in Aids.

* All the personal statements by patients quoted in this issue have been extracted from *Vivre le sida—Le livre blanc des états généraux*, published by éditions du Cerf, Paris, 1992.

"When I learned I was HIV-positive, I thought I'd be dead in three months, that death was inevitable. But I started doing research, and the medical team following my case were always forthcoming with information. I finally understood how the virus works, and that helped me to accept it. It became clear that despite the onus of the treatment it was possible to lead an active, intense life."

appetite, but more important is a change in the body's balance of tissue growth and wasting as a result of macrophage cells becoming infected by HIV. After HIV infection, cells release the wrong chemical signals (called cytokines) which leads to wasting as well as to immune deficiency.

(d) Brain disease. Patients with Aids develop impaired brain functions leading in severe cases to dementia, i.e. the loss of conscious thought and normal behaviour. In patients with Aids dementia, HIV has invaded the brain. A particular type of cell in the brain, called microglia, resembles macrophages and these cells are sensitive to HIV infection. They in turn affect the maintenance of healthy nerve cells in the brain, again via local cytokine signals. Thus when the microglial cells become infected with HIV, the surrounding nerve cells begin to die, leading eventually to the demented states.

Thus the different illnesses apparent in Aids depend on which cells and tissues become infected with HIV. The virus does not necessarily kill these cells outright. It can induce immune destruction through the presentation of viral components and reduced replenishment of cells through the aberrant cytokine signals. What is surprising is how long it takes HIV to cause Aids.

Because HIV infects the immune system it is invading the very cells that exist to combat infection. A balance of power ensues in which at first the immune system makes all the right responses to combat HIV, but in which HIV eventually gains the upper hand and slowly destroys the immune system. In fact, some scientists believe that HIV somehow persuades the immune system to autodestruct.

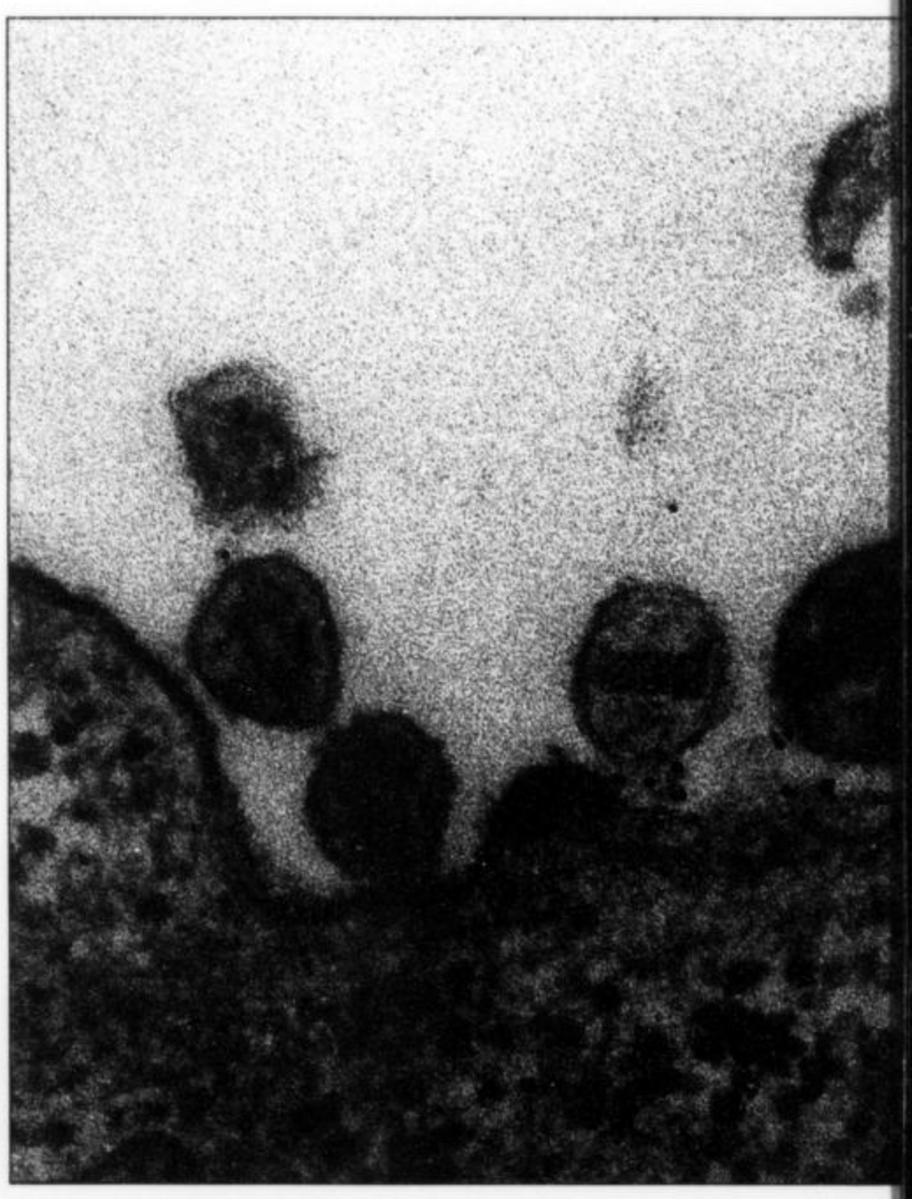
HIV variation

One reason why HIV usually wins this battle between invading infection and the body's response is that the virus is very mutable, that is, it changes its genes and outer coat so rapidly that the immune system has difficulty keeping up. This induces an overactivation of immune responses that eventually leads to immune exhaustion and destruction. As HIV infection progresses to Aids, more virulent forms of the virus often arise. There is also some evidence that those individuals who become infected by HIV from others who have already developed Aids tend themselves to progress to Aids more quickly.

The variation in HIV strains is even greater between individuals than within an infected person and in different geographic areas different substrains of the virus may prevail. This extensive variation makes the development of a universal vaccine all the more formidable. The propensity for variation is also one of the major stumbling blocks to anti-viral therapy in Aids. The virus soon evolves resistance to the drugs like AZT that would otherwise block its reproduction. So each drug is only effective for a short time. Combinations of anti-virals, however, have more hope of preventing or at least delaying Aids, but they will be far too expensive for global use.

Exceptional cases

Despite the gloomy view that HIV has been winning thus far, I am optimistic that we shall make genuine strides in controlling infection and disease. HIV is as intensively studied as any virus has ever been, and some of our new knowledge has quickly been adapted to improve human health. For instance, within one year of confirming HIV as the cause of Aids ten years ago, blood tests were refined from being experimental research tools to be applied as mass screening tests to protect the world's blood supplies from HIV contamination. No other diagnostic medical test has had such a rapid and important impact in preventing disease.



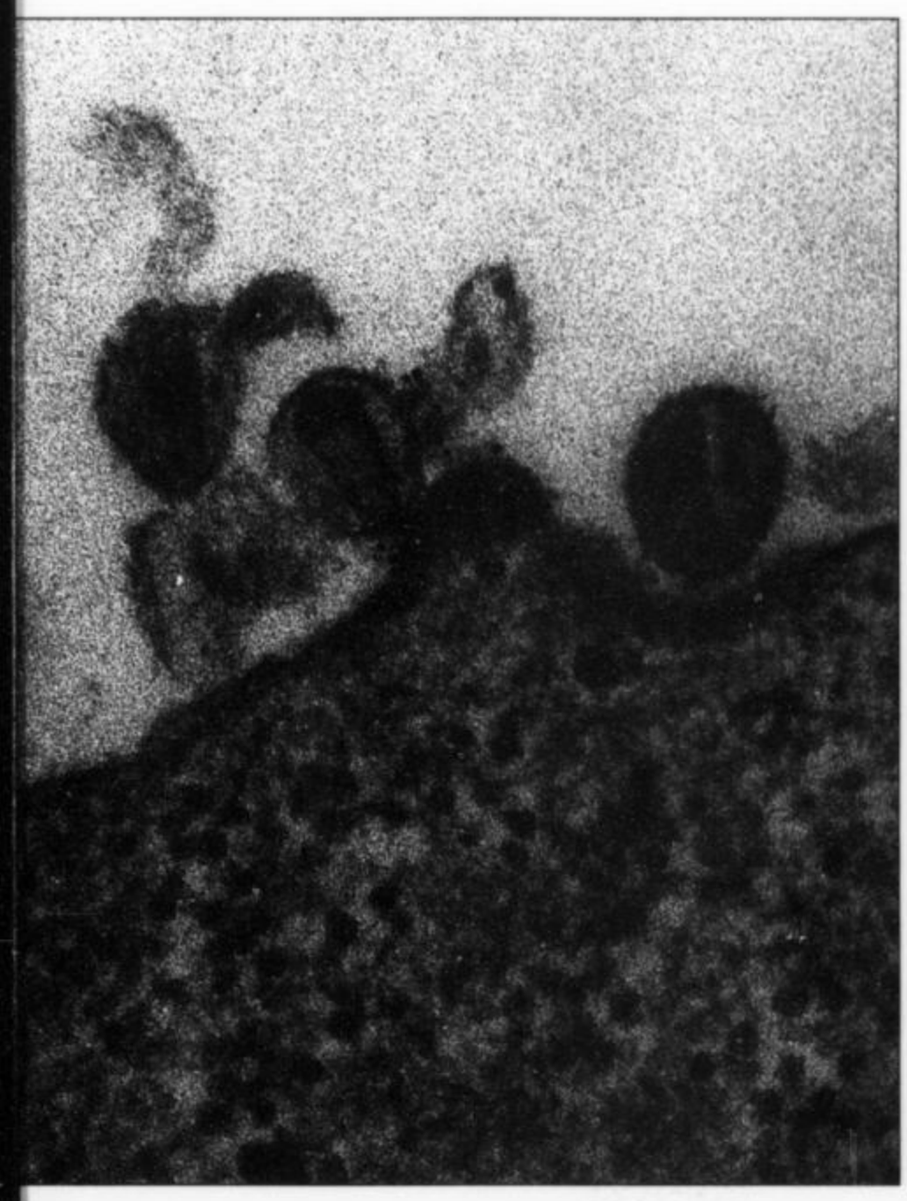
Right, HIV particles emerging from the surface of a lymphocyte. Each tiny sphere measures 100 nm in diametre (1/10,000th of a mm). The photo was taken using an electron microscope.

ROBIN WEISS,
of the United Kingdom, is Director of Research and Professor of Viral Oncology at the Institute of Cancer Research, London. A specialist in retroviruses, he has conducted research on HIV since 1984 and has played a pioneering role in understanding the structure and biological behaviour of the virus.

As we gain a better understanding of why infected individuals progress to Aids, so may our means of halting that process improve. Currently medical researchers are focusing on a minority of individuals who have been infected with HIV for more than ten years without showing any signs of progression to illness. These people have a relatively low level of virus in their bodies and are able to maintain normal levels of CD4 cells. In one case, at least, the person harbours a defective form of HIV, rather like a form of simian virus that protects monkeys from Aids. The more we can find out about how such individuals suppress their HIV infection, the more chance we have of discovering treatments that may enable all infected people to shift the balance of power in favour of keeping the virus under control.

There is some new evidence that a few individuals may be exposed to HIV infection without the virus's actually colonizing their bodies. A small number of women who sell sex seem to be permanently resistant to HIV infection even though they frequently entertain HIV-positive partners. These women have specific and effective immune responses to HIV. Finding out why will help vaccine-development because we can regard the women as being naturally immunized against HIV.

In summary, the pace of scientific discovery about Aids and HIV has been rapid indeed, far faster than in many other diseases such as malaria, tuberculosis and cancer. At the moment Aids is winning the race, but there is the opportunity to catch up provided the right effort is made. ■



LUC MONTAGNIER

The state of research

Although patients and the public are not yet aware of it, important advances in the understanding of Aids pathogenesis have been made in the last four years which could lead to better therapeutic approaches in the near future.

It appears that indirect effects of HIV infection, via circulating HIV proteins or non-infectious virions, could amplify the direct infection of target cells. Moreover, the strong oxidative stress which follows HIV infection could also increase damage to the immune system.

We now have powerful weapons with which to counteract the effects of HIV infection, as well as the appropriate laboratory tools with which to make a rapid evaluation of the effectiveness of the combat. But we do not yet know how to combine these weapons optimally.

I therefore propose that a network of clinical research units be created in which researchers and clinicians will work closely together: for small cohorts of HIV-positive asymptomatic individuals, "à la carte" treatment will be defined, based on the return to normal of all surrogate markers.

Such treatments will have to be complex to counteract the multiple facets of the disease. One could, for instance, envisage combinations of several antivirals (reverse transcriptase inhibitors and antiproteases), of antibiotics, of antioxidants and cytokines involved in the restoration of cellular immunity against the virus and the opportunist agents (IL-2, IL-12).

The first step will be to stabilize to a low level the HIV infection in such patients. A further step may be a complete eradication of HIV infection. ■

LUC MONTAGNIER,
of France, is Professor of Virology and head of the Viral Oncology Unit at the Pasteur Institute in Paris. His team was the first to discover HIV-1 in 1983.

What can be done?

by Michael Merson

Aids is gaining ground everywhere, but we now know much about how to slow the spread of HIV

Below, a child victim of Aids at a summer camp in Middleville, New Jersey (U.S.A.).

Globally, the World Health Organization (WHO) estimates that around 4 million women, men and children developed Aids between the start of the pandemic and mid-1994. That figure included a rise of 1.5 million in just one year, and the total may approach 10 million by the year 2000.

The numbers of Aids cases are rising everywhere. Proportionately the increase is greatest in regions where the epidemic is newest, such as Asia. Asia's share of global Aids cases rose eightfold in the year to mid-1994. In absolute terms, however, the heaviest impact is still being felt in the parts of North America and Africa where HIV struck first.

In New York City, for example, Aids is the leading cause of mortality among men and women aged twenty-five to thirty-four. In the Masaka district of Uganda, Aids accounts for close to half of all mortality in the total population.

In Africa Aids is having an economic and social impact out of all proportion to the numbers dying. Employers face higher medical costs and the loss of staff with valuable training or skills. Communities witness the break-up of their basic units, i.e. families, as more and more children are orphaned. WHO estimates that up to eight million children could lose their mothers to Aids by the year 2000.

As far as infections are concerned, WHO estimates that 17 million had occurred by mid-1994—three million more than a year before. A little over 60 per cent of all infections to date have been in sub-Saharan Africa, but the wave

of HIV is now crashing over Asia, home to more than half of the world's population. WHO estimates that the total number of HIV infections in south and southeast Asia surged by one million to 2.5 million in the year to mid-1994. China is very vulnerable, as shown by a sharp rise in the reported incidence of sexually transmitted diseases (STDs), which make HIV transmission more likely. If HIV takes a strong hold in the world's most populous country, the impact on Asia could be huge.

In the countries of central Asia and eastern Europe, WHO estimates there have been something over 50,000 infections, although the figure may have to be revised upwards when HIV data on people practising high-risk behaviour becomes available. In North Africa and the Middle East—another region where the Aids threat once seemed remote—there have been an estimated 100,000 infections.

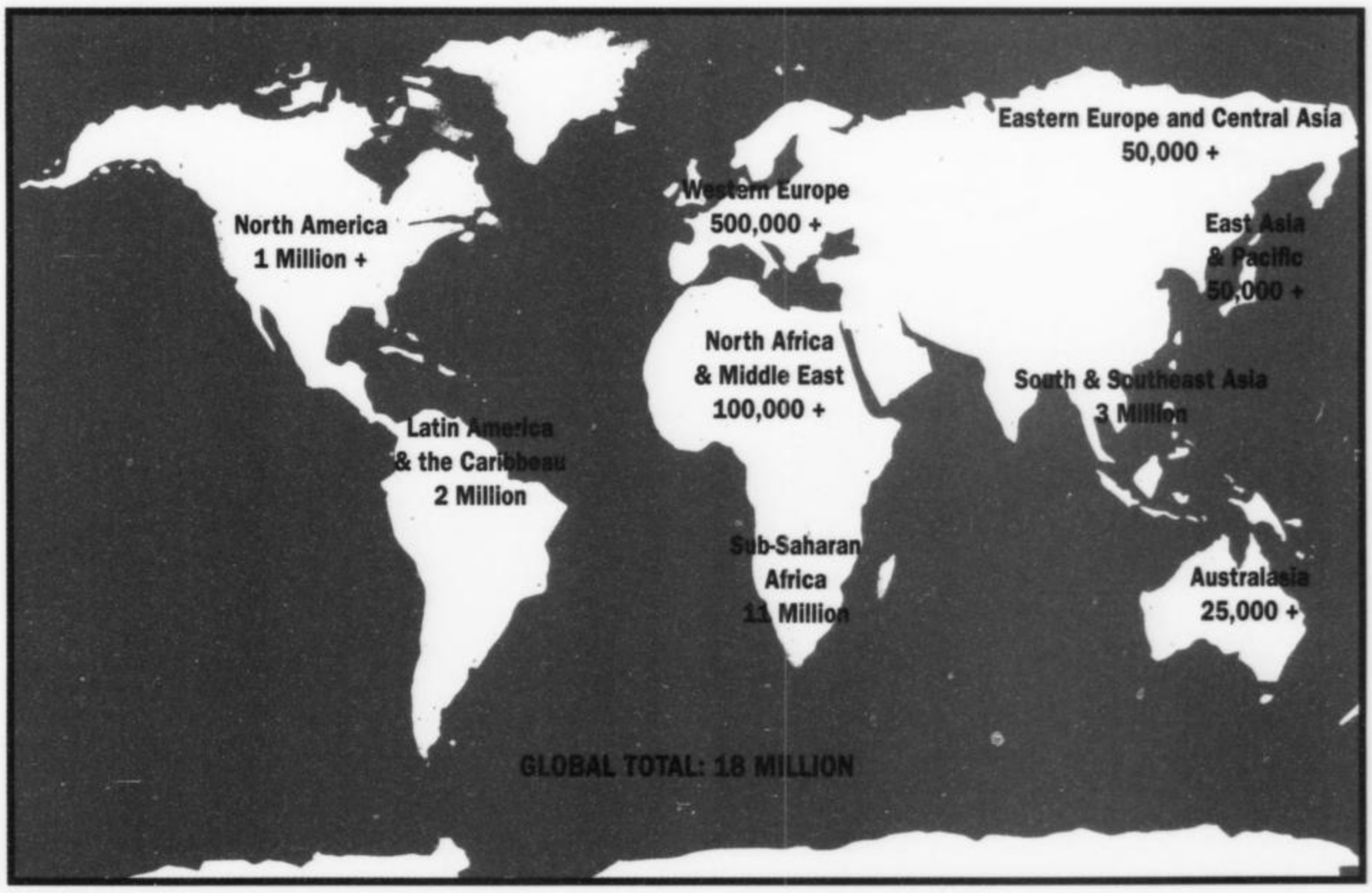
Latin America and the Caribbean have had an estimated two million infections so far. More and more parts of Brazil, which may hold the key to the ultimate extent of the epidemic in this region, are seeing rising HIV prevalence in their STD clinics.

Prevention strategies

We now know a good deal about how to slow the spread of HIV. There is no easy solution, no single recipe. But there are effective strategies and approaches in Aids prevention, based on knowledge and experience acquired from many countries.

Like syphilis and other sexually transmitted diseases, HIV can be transmitted through transfusion of contaminated blood and the sharing of needles. The world must do all it can to ensure the safety of the blood supply. It is unacceptable for a procedure designed to save lives to

A giant "Bleachman" roams the streets of San Francisco (U.S.A.) handing out packets of bleach so that drug users can sterilize their needles and avoid infection.



Left, estimated distribution of total adult HIV infections from late 1970s until late 1994. (Source: WHO-Global Programme on Aids, January 1995).

"To some extent the answer is inside each of us. I produce psychological antibodies, and I create the best possible environment for myself so as to make a little progress each day. What hurts the most is the pity from the hospital people. When the nurses squeeze my hand, look at me full of pity and wish me luck, it hurts."

endanger them. For drug injectors, WHO recommends harm reduction programmes which give legal access to sterile injection equipment. But sexual intercourse is by far the main mode of transmission of HIV, and it is in this area that we must focus our efforts.

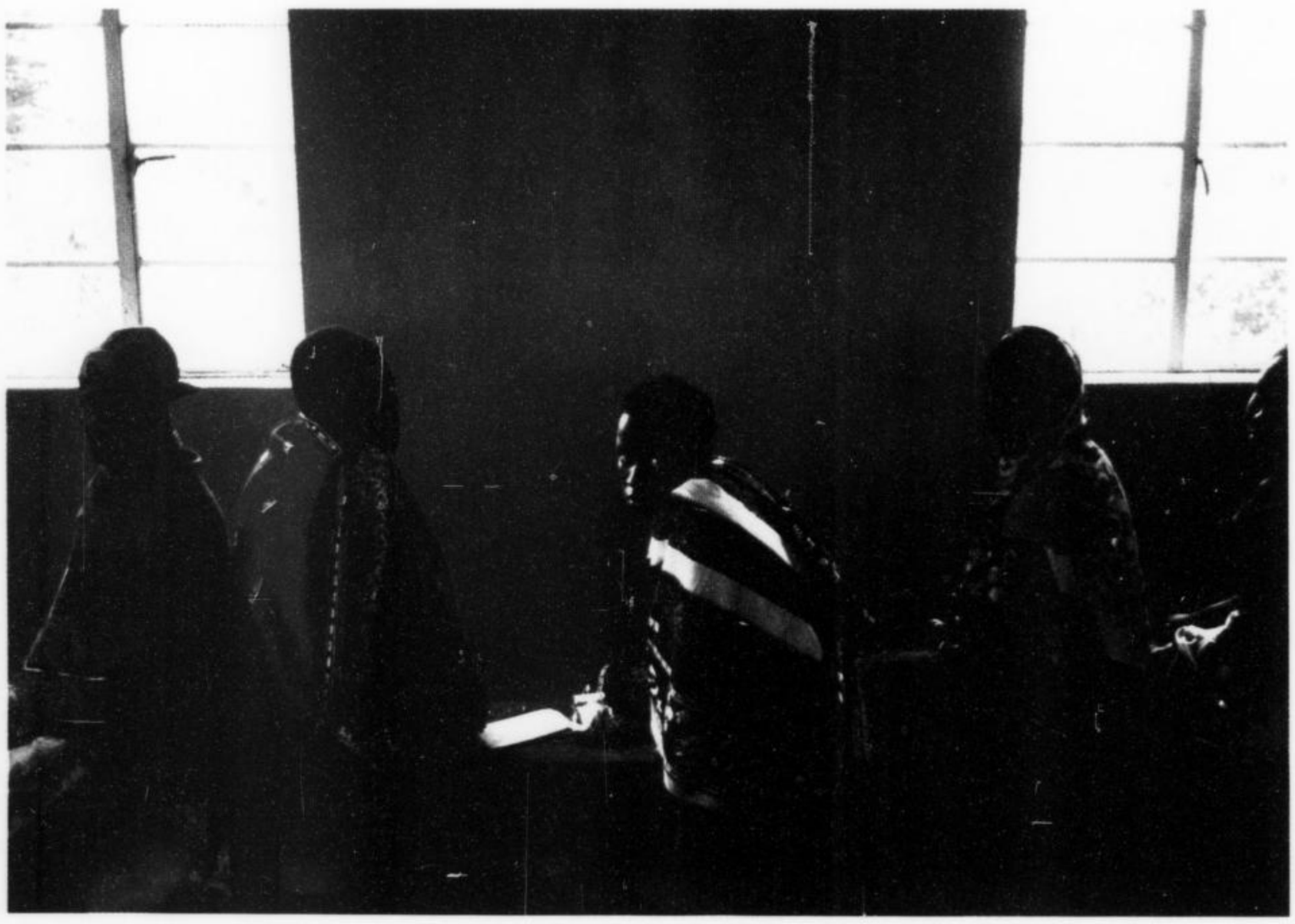
To prevent sexual transmission, we must change people's sexual behaviour or make sure it is safe from the start. Safer sexual practices include abstinence, mutual fidelity, non-penetrative sex, and protected sexual intercourse—the use of condoms. All sexually active people must know about these options and follow one of them as a protection against infection. Media campaigns and special activities targeted at the most vulnerable groups *can* reduce the number of HIV infections, especially in a non-discriminatory environment that respects the rights of individuals.

Young people are particularly vulnerable. Worldwide, half of HIV infections to date have occurred in people aged fifteen to twenty-four. Children must be educated about sex and the risk of HIV infection *before* they become sexually active. Research has proved conclusively that sex education in the classroom does not lead them to early sexual experimentation or promiscuity. It gives them the skills to avoid risk situations and leads to more responsible sexual behaviour. Out of school, peer education and face-to-face contacts should be used with young people.

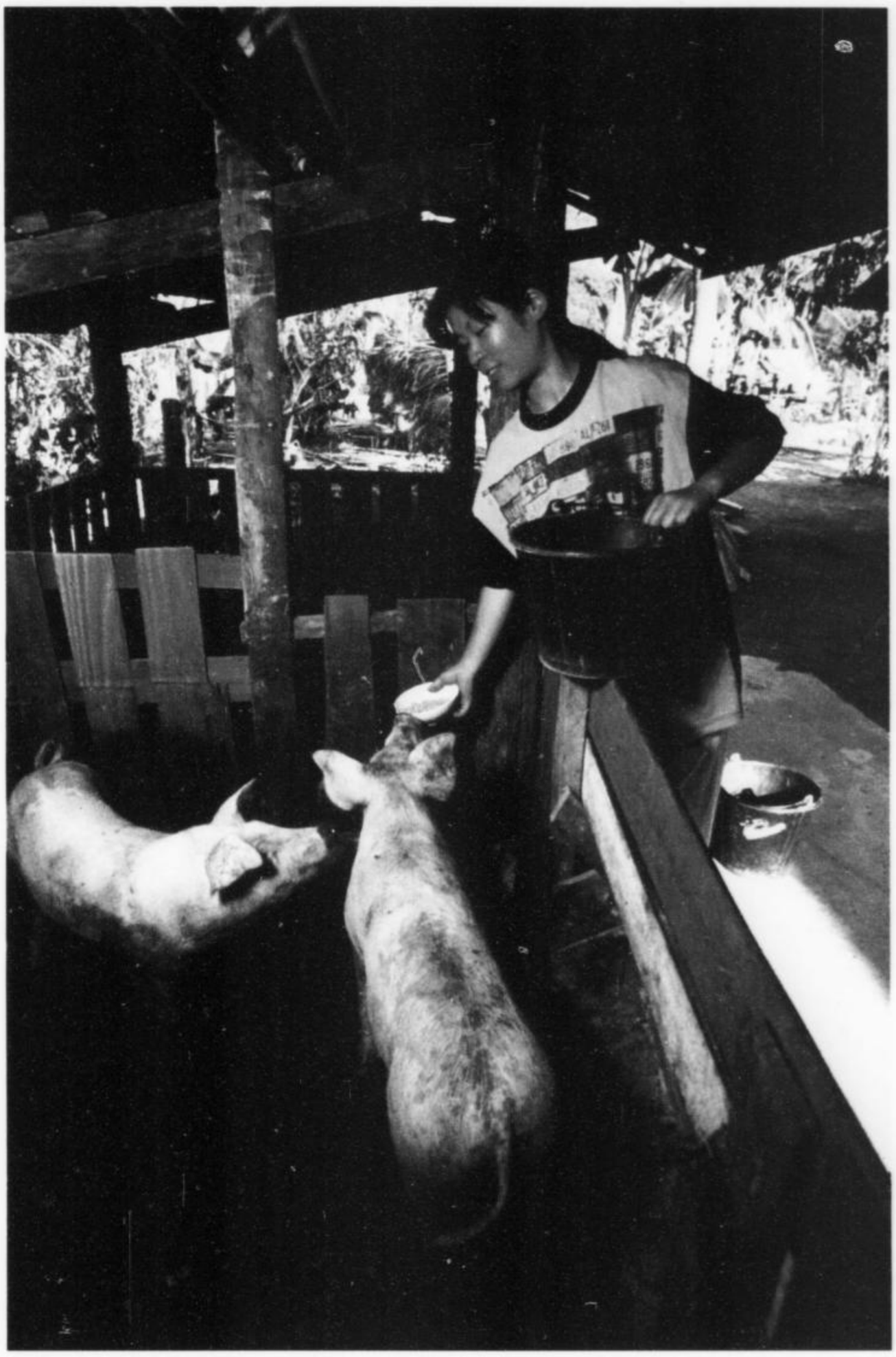
Apart from the promotion of safer sex, including condom use, the second main way to prevent sexual transmission of HIV is the early diagnosis and treatment of conventional STDs such as syphilis, gonorrhea and chancroid. For the treatment of STDs, WHO is now recommending the use of simple flowcharts to help decide how to treat STD patients appropriately at their first visit. WHO believes STD services should be part of primary health care facilities, to make them more accessible. At the same time. special STD services should be set up for those most at risk.

A necessary part of any Aids/STD prevention programme is condom promotion. There are now many examples of condoms proving

Sexual intercourse is the main mode of transmission of HIV, and it is in this area that we must focus our efforts.



Young Tanzanians orphaned by Aids.



A pig-rearing project for former prostitutes in Thailand. Its objective is to generate income as an incentive to discourage girls from returning to prostitution.

effective in Aids/STD prevention. In Thailand, for example, a recent 100-per-cent condom-use campaign in brothels has reduced STD rates to almost zero.

Safer sex campaigns and better STD treatment can achieve impressive results in a relatively short time, but we must not neglect more long-term action to address social factors which fuel the spread of HIV. Prime among these is the status of women.

The Aids pandemic has not only drawn attention to the vulnerability of women to HIV infection and STDs, it has also highlighted the inequalities that affect most women, particularly in developing countries. These social inequalities sometimes push women to the point that they take up sex work, with its associated risks of acquiring a fatal infection.

For women to be able to insist on safer sex, to have the choices that too often are not theirs, their social and economic status must be raised. They must have equal access to education and employment and supportive laws to protect them from violence and abuse.

Care for the infected

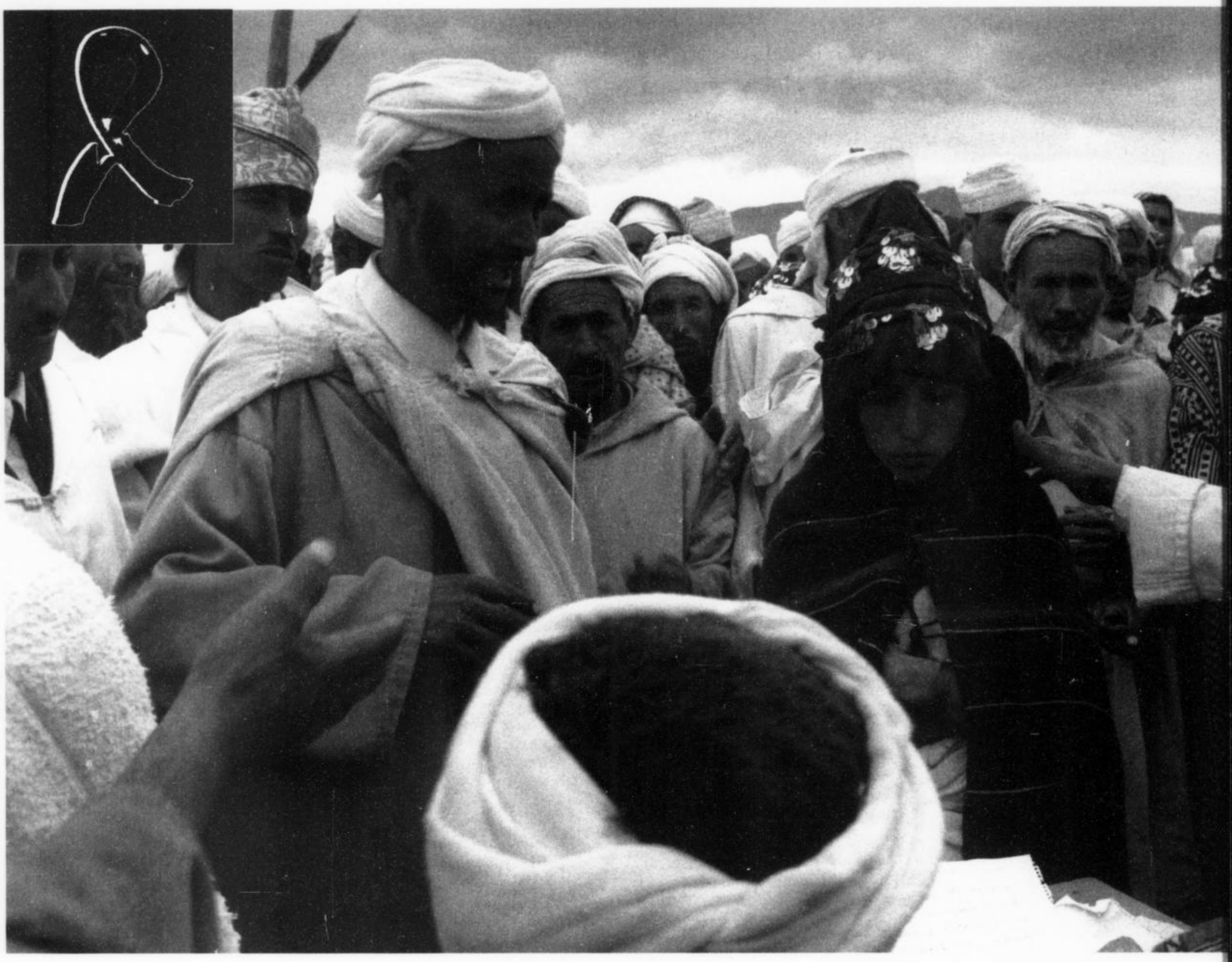
Prevention is only one side of the response to Aids, of course. The other is care for the infected. What is needed is a continuum of care, from the home to the community to the hospital. For developing countries facing many health problems, this will be difficult to achieve. At a minimum they must reorient national spending so that health care gets its due. Donor countries, too, should play their part by providing more resources for care.

Both in prevention and care, the response of any country must be truly national, embracing health and non-health sectors, communities and individuals. Non-governmental organizations can play a key part in taking safer sex messages to people government services find hard to reach, and in providing care in the community for the infected or ill. In many countries, people living with HIV/Aids are invaluable partners.

The international response should also be multisectoral. This is one reason why WHO and five sister United Nations agencies—the United Nations Development Programme, the United Nations Population Fund, UNESCO, UNICEF and the World Bank—are currently setting up a joint and co-sponsored UN Programme on HIV/Aids. The new programme aims to unite and co-ordinate UN support to national Aids programmes and make the best use of limited resources. ■

MICHAEL MERSON,
of the United States, is a specialist in infectious diseases. From 1990 to 1995 he was Director, then Executive Director, of WHO's Global Programme on Aids (GPA). He left the GPA earlier this year to become Dean of Public Health and Chairman of the Department of Epidemiology and Public Health at Yale University Medical School, New Haven, U.S.A.

"I'm from Nantes in western France. I'm HIV-positive. I got the news on 22 November 1989. That day my life was totally changed. There's nothing left of me. I try to live from day to day, but I feel there's nothing left of me."



THE MAGHREB: **Women in the front line**

by Hakima Himmich and Latifa Imane

Two members of Morocco's anti-Aids association explain why women in the Maghreb are particularly exposed to HIV infection

More than four million women are now infected with HIV. Over 3,000 more are infected each day. Most of them are between fifteen and thirty-five years old and live in the Third World. The disease is taking the heaviest toll of African women. According to WHO one out of every forty African women is affected.

The latest reports show that the epidemic is spreading rapidly in the Maghreb. In Morocco (the situation is pretty much the same in Algeria and Tunisia) the percentage of women among Aids sufferers rose from 8 per cent in 1988 to 25 per cent in 1994.

Myriem, widowed at 25 and HIV-positive

The figures indicate the vulnerability of women like Myriem, who was widowed seventeen days after her wedding. The virus was a legacy from her forty-eight-year-old husband, who had married her after the death of his first wife. Contrary

A wedding ceremony in the High Atlas Mountains, Morocco. The shape of the bride's headdress indicates that she is a virgin.

to a widely held prejudice in the Maghreb Aids is not only a disease of "loose women" who have left the "straight and narrow". In over 55 per cent of female Aids cases in Morocco the only known risk factor is marriage. Like half of the women infected each day in the world, Myriem had had only one sexual partner, her husband.

Myriem found it hard to understand what the doctor was saying when he explained that she was the carrier of an invisible virus that is spread mainly through sexual intercourse. She was born in a rural area and never went to school. Of course, she had heard of "Ades", but she didn't know what it was. How could she, a "clean" women, have become infected with a "dirty" disease?

Myriem is the archetypal example of a young, inexperienced, dependent and ignorant woman who is defenceless against the infection. There are many Myriems in the world, especially in Africa and Asia. They are ideal prey for a virus that chooses the weakest as its targets.

To begin with, they are biologically vulnerable. We know today that in unprotected love-making, men are three times more infective than women. The more fragile female genital mucous membrane encourages transmission of the virus contained in sperm. Adolescent women whose mucous membrane is not fully mature are at even greater risk. This explains why young women aged between fifteen and twenty-four in developing countries have a much highter infection rate than young men of the same age. Another possible reason for this is that young women often have sexual relations with sexually experienced older men.

This fragility is often aggravated by the existence of sexually transmitted diseases (STDs) that generally reveal no symptoms in women. Women keep quiet and are rarely treated. And even when they have symptoms, women in the Maghreb prefer to keep their intimate forms of suffering to themselves rather than face examination by a doctor. In the absence of a public health system adapted to their needs, many women turn to traditional medicine. More than 70 per cent of Moroccan women still give birth to their children at home, and consequently the mortality rate is high.

"When someone tells me, 'You've got to fight. It'll help your chances of survival,' I always want to ask what they mean by 'fight'. Fight what? And how?"

Female sexuality: what goes unsaid

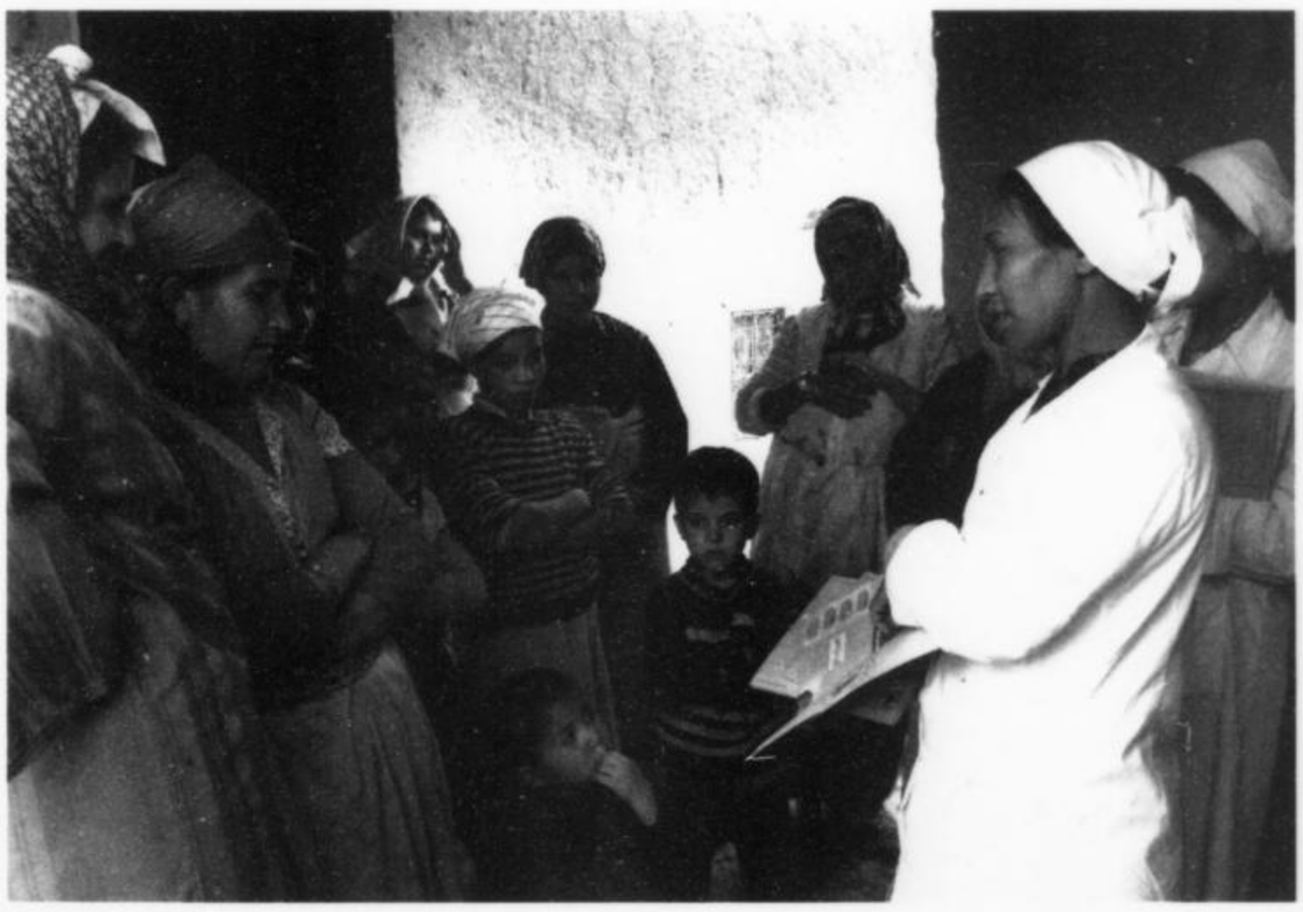
But the health system is not the only problem. The most important issue is the way in which female sexuality is perceived both by women and by men. Although Islam only accepts sexual activity within marriage, for men as well as for women, the social balance of power enables men to cheat. Sexual appetite in men is a sign of virility and power. Female sexual appetite is regarded with contempt. Men are expected to have gained experience prior to marriage; but a woman must be a virgin on her wedding night.

Myriem was a virgin when she got married. Her husband, who knew he was ill, demanded a certificate of virginity. Marrying a virgin is supposed to have purifying virtues.

After marriage our societies continue to show indulgence towards men's sexual "excesses". Women must remain faithful, but men are occasionally allowed to go and see whether the grass is greener elsewhere. They may even indulge in polygamy and take up to four wives. They are men, after all, and as our grandmothers said before us, "The eye (the woman) cannot rise above the eyebrow (the man)."

Today, as they face the threat of Aids, women realize how little power they have. "I'm afraid, really afraid. I know my husband is unfaithful to me, but what can I do? How can I tell him my fears without making him angry? People here don't talk to their husbands about that sort of thing." How many times have we heard that said on our telephone help-line or in our information

A family planning session in a village near Marrakesh.



sessions. More and more Moroccan women are afraid of Aids and know they are at risk, but they find it hard to talk about it. Only rarely do they dare insist that a flighty husband use a condom.

"I can't stand the pill, but my husband refuses to use a condom. He says it's a piece of rubber that reduces his pleasure. And I've had six children! But there's nothing I can do. If I nag him about it, he'll find another wife and I'll be out in the street. Of course I'm afraid of Aids, but I'm even more afraid of being kicked out. So. . . ."

Zahra, a thirty-three-year-old housewife, is entirely dependent on her husband, and so she has little chance of negotiating with him about limiting the number of pregnancies or preventing STDs and Aids. More than 69 per cent of the women suffering from Aids who are being treated at Casablanca University Hospital are jobless, like Zahra, and 57 per cent of them have never been to school.

"The only friends I could rely on are dead."

Their economic dependence and lack of education seem to be additional risk factors. Caught between the fear of Aids and anxiety about being left on the shelf, women feel trapped. In many cases the prospect of divorce frightens them the most. "Of course I have heard about Aids," said Zahra, "but I have never seen anyone suffering from it. On the other hand, I have seen plenty of divorced women. So I know what I'm talking about. When you don't know how to read or write, your only security is marriage."

In the Maghreb there are millions of illiterate women like Zahra. Schooling is only compulsory in theory. According to a study carried out in 1990, one out of every two girls attends primary school; one out of three attends secondary school, and only six in a hundred reach university. Access to school, especially in rural areas, is still a privilege reserved for boys.

Even when they have symptoms, women in the Maghreb prefer to keep their intimate forms of suffering to themselves rather than face examination by a doctor.

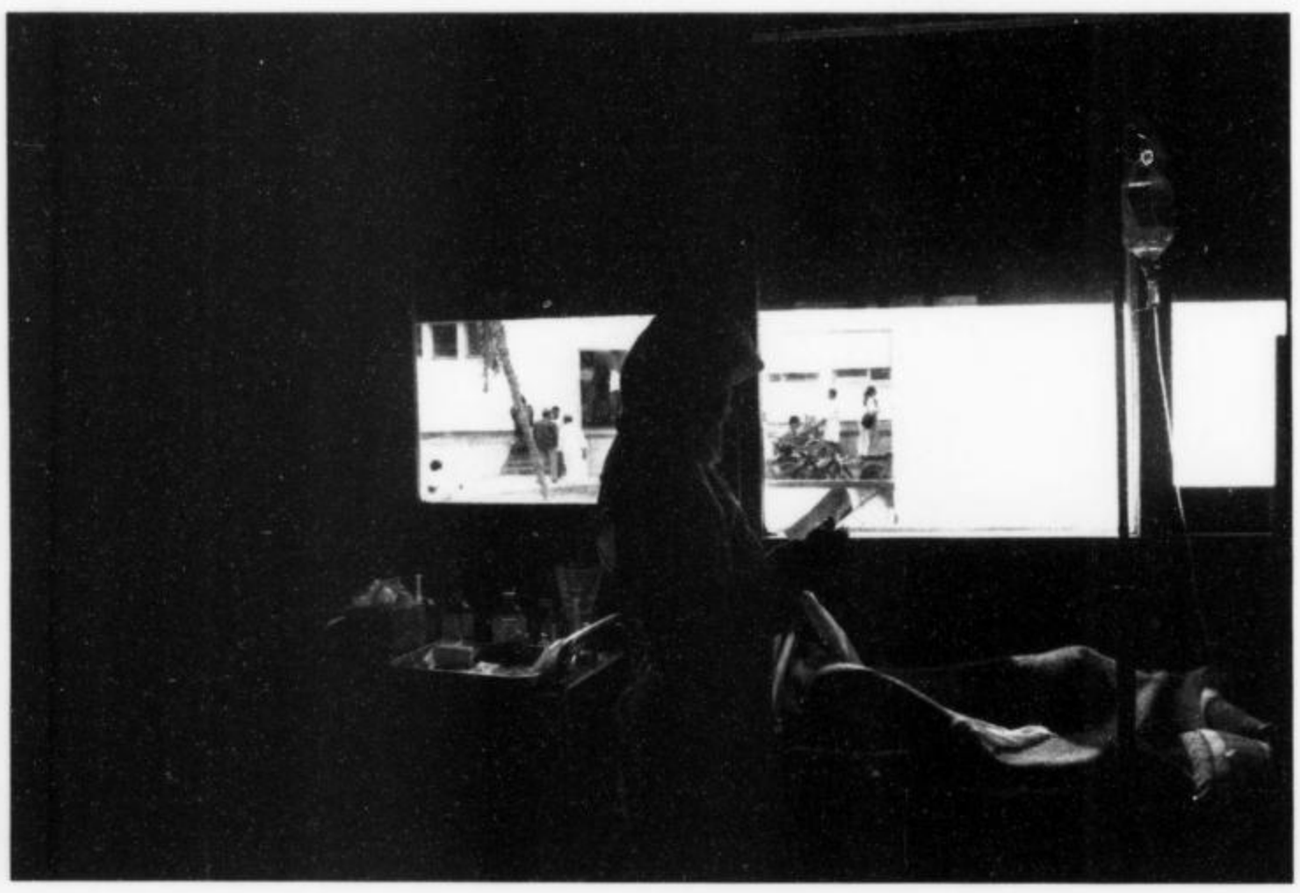
Lacking educational qualifications, these women have no choice but to get married, or else work for a pittance as housemaids or factory hands. Some who have been abandoned or widowed turn to prostitution, which exposes them to all kinds of abuse and danger but enables them to support their families. This is what happened to Zoubida, a thirty-five-year-old widow with three daughters. "When my husband died," she explains, "he left me a small house, but my in-laws sold it, and I found myself in the street overnight. What else could I do? I started 'going out' to feed my children. I had no choice." Zoubida has been selling sex for ten years in a small Casablanca street. No one knows about it in her family, who live some fifty kilometres away and think she works in a factory.

Zoubida only uses condoms when a customer asks her to. "A lot of men don't like condoms," she says. "And there's so much competition. All these high school students. If I refuse to do it, there are a hundred girls ready to, without condoms or anything." Zoubida has such a low image of herself, her body and her status that she feels she has nothing to lose. If she contracts Aids or anything else, so what?

In any case, the infection process is often incomprehensible. There are radio and television programmes about it, and articles in the press, but for Zahra and Zoubida, who have had no schooling, media language is hard to follow. What's more, talk about prevention is first and foremost aimed at men.

Is Aids revealing the cracks in our social, health and legal systems and in our traditional ways? Perhaps the urgent need for specific answers to the challenge of Aids will at last force us to rethink our societies. ■

A nurse with a patient in the infectious diseases department of Ibn Rochd Hospital in Casablanca.



HAKIMA HIMMICH,
of Morocco, teaches at the Casablanca Medical School. A specialist in infectious diseases, she is particularly interested in HIV infection and the vulnerability of women to HIV/Aids.

LATIFA IMANE,
a Moroccan journalist, is responsible for communication and training with the Moroccan Association against Aids, Casablanca.

ZIMBABWE: The social roots of Aids

by Mary Bassett

Epidemics depend not only on infectious agents but on the social conditions that sustain their spread

Above, a family of gold-panners in Zimbabwe. The father, 36, has Aids. The mother, 34, is HIV-positive. They have six children.

In Zimbabwe, contemporary sexual culture has been shaped largely by the twin legacies of traditional patriarchal values and colonial labour relations, which entrenched the migrant labour system and made separation of men from their wives a way of life. Migrant labour dates to the expropriation of African lands at the end of the nineteenth century.

Landless and forced to pay taxes in cash, African men left their homes and families for employment on big farms, in mines and in towns. Women and children stayed behind in the overcrowded Tribal Trust Lands, to which the African population was now consigned. Here they survived as subsistence farmers on poor land, assisted by money sent home by their men. This system remains intact and continues to affect many families. Perhaps one-third to one-half of rural households in Zimbabwe survive with this "split family" strategy.

Some women also migrated to meet the need for sexual services created by the artificial settlement of men without their families. Men entered into new sexual relationships in town. Hitherto, in traditional society, a man could have more than one wife if his wealth permitted. "Multi-partnering", which has become a feature of life for all men, carries little long-term commitment or financial responsibility.

In a 1987 study of Harare factory workers, we found that married men—whether living with a wife or not—were actually more likely to pay for sex than single men. The same study showed that four-fifths of married men had girlfriends in addition to their wives. True, there are men who have sex only with their wives and men who are single and celibate; they are, however, the minority. Not surprisingly this configuration of sexual relationships has led to rampant spread of sexually transmitted diseases (STDs). For many years sexually transmitted diseases were the leading cause of the out-patient attendance for both men and women in urban areas. Aids is now the leading cause of adult death in the capital city of Harare, accounting for nearly one-quarter of deaths.

Women and HIV

Where heterosexual transmission is the most common way of acquiring HIV, the status of women has a clear bearing on risk. Much has been written on women and Aids, often focusing on prostitutes. Indeed, prostitutes have been portrayed as the vector of the African Aids epidemic. But very little has been written about wives, and virtually nothing about the relationships between these often commingled groups.

The number of women who sell or barter sex at one time or another is probably larger than is generally thought. Some of the survey estimates are so high (ranging up to 10 per cent) that Zimbabwean researchers find them unbelievable. Very often the women involved are divorced mothers who have children to support, and for whom remarriage is an unlikely prospect. Added to these women are growing numbers of young rural women who flee deepening poverty and recurrent drought in a bid to support their families. Some sell single sex encounters. Probably more common are relationships of varying degrees of permanence which include domestic and sexual services.

Despite the emphasis on women who sell sex, however, it is critical to stress that these women are a minority of women with HIV. In fact the majority of women infected with HIV are monogamous, married women. Of the 6,500 women who tested positive at the National Public Health Laboratory in 1992, over 50 per cent were married.

Married women, however, have been neglected in both research and Aids-prevention programmes. Warnings to avoid multiple partners have little relevance to these women. Their husbands are the ones who are likely to have multiple partners. It is very common to hear women talk with a combination of exasperation, amusement and irritation about how impossible it is for their husbands to maintain an exclusive relationship with a marriage partner.

Marriage is a vehicle for a woman's sense of selfhood. To be a person, for both men and women, involves entering the cosmology of ancestors. In line with patrilineal inheritance, this process must take place within the male lineage.

In Matabeleland, a grandmother brings up her grandchildren orphaned by Aids.

Not having a husband has spiritual as well as material significance. Furthermore, women without men face a host of economic and social disadvantages. Economic dependence is perpetuated by the fact that women are less likely than men to be educated, have skills or stable employment outside the peasant sector. In Zimbabwe, despite a series of important laws passed in the 1980s which guarantee women's rights to property, inheritance and maintenance, divorced and widowed women still face many hardships. These paper rights have not yet been translated into actual rights.

'Don't talk to us, go talk to the men'

How many researchers who have talked to women about Aids prevention have been admonished: "Don't talk to us. Go talk to the men"? They are right. We also have to talk to men. Because men are seen as the "winners" in patriarchal societies and thus allegedly are not amenable to change, they have been by-passed by researchers eager to find ways to empower women. But men remain the power-brokers in both reproductive and other sexual decision-making. How are men instructed in their roles? With whom do they talk about sex? How do they view sexual pleasure and responsibility? In order to find out what permits men to be sexually irresponsible, we need to know what motivates them. For example, a follow-up study of

"Even today, I don't feel that I'm living with the virus. It's something outside me, something remote. I never realized that death could reach me. I feel hope and great confidence in life. I'm grateful to Aids. Joys and sorrows, suffering and laughter, all the things I can share with the people around me, are due to Aids."

the Harare factory men showed that some are now foregoing girlfriends because of expense and are opting for paid single sex encounters. In trying to save money for their families, these men are acting responsibly, but by turning to paid sex, they and their wives may be at higher risk of HIV infection.

Among adolescents from fifteen to nineteen years old, the prevalence of HIV infection is low. Data from the Zimbabwe National Blood Transfusion Service show that about 2 per cent of donors in the school-going group test HIV-positive. But among this group, girls are three times more likely than boys to be seropositive. An excess of seropositive women in young age groups has been shown throughout Africa. The basis of this vulnerability is probably both social and biological. The social pattern of partnerships, younger-woman/older-man, means that men are more likely to be sexually experienced and may be HIV-positive. Furthermore the genital tract is still maturing and may be more susceptible to infection.

The epidemiology of HIV infection supports the idea of targeting young people who are just beginning to become sexually active and still have low rates of infection. Targeting young people raises many questions. How are young people learning about sex? How can they be taught most effectively? By whom? There were traditional mechanisms for transmitting such information, but studies suggest that throughout Africa urbanization and the disruption of traditional life have eroded the strength of traditional institutions.

How important do young people consider the Aids problem? In several studies done in Zimbabwe, it was clear that young people are more concerned about unemployment than Aids. They greet with scepticism the concern that they should practise safe sex when they cannot find jobs.

No easy answers

All epidemics depend not only on the "agent" (in this case the human immunodeficiency virus) but equally on sets of social conditions which sustain its spread. It is not surprising that an epidemic of the dimensions of the Aids epidemic would have clear social roots.

The connection between economic hardships, the subordination of women and Aids is apparent in everyday life, but if Aids-prevention is to succeed, sexual relationships will have to change before the problems of poverty and inequality are resolved. At the level of individuals, we must do more to talk with married people, both men and women. Difficult though this may be, there is no alternative. Even with the expansion of technical options, particularly those under female control, it is hard to imagine that we can escape the fact that the way men and women construct their sexual relations will have to change. To fail to recognize that culture can and will change is to step away from a debate which is central to Aids-prevention.

Above, Warren Hills cemetery in Harare, the capital of Zimbabwe. "Aids is now the leading cause of adult death in Harare, accounting for nearly one-quarter of deaths."

Finally, at the level of health services, there is clearly room for improving more "biomedical" interventions. It is important to ensure better identification and treatment of other STDs, which enhance HIV transmission. Zimbabwe appears to have had considerable success in reducing STDs.

Another promising area is female-controlled methods, including the female condom, reduced use of intravaginal drying agents and possible use of microbicides. To tell women to tell men to use condoms is clearly a limited strategy. The success of the family planning movement can be at least in part attributed to the development of the oral contraceptive. Women have the history and experience of taking responsibility for the outcome of sexual activity. It makes sense to take advantage of this and develop methods to reduce HIV infection which women can control.

For all these interventions we must directly face the issue of cost. The need for trained staff, STD diagnostic equipment and adequate provision of antibiotics will cost money, money that the health services do not have.

Moreover, despite donor support, funds for condoms are inadequate: although male condoms cost only a few cents each, we are able to import quantities only adequate for about 5 condoms per adult per year. Worse, the female condom at $2 US costs about 100 times more than the male condom. Obviously, without subsidized prices this method will not be used widely. ■

Attitudes can and must change—this is central to Aids prevention.

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of the United States, is a medical doctor and a Senior Lecturer in the Department of Community Medicine at the University of Zimbabwe. She is currently on leave as Director of Harlem Center for Health Promotion and Disease Prevention in New York.

INDIA: No time to lose

by I.S. Gilada

A bold preventive education campaign brought a marked reduction in HIV incidence among Bombay prostitutes

ISHWAR SATYANARAYAN GILADA,
of India, is a dermatologist and venerologist and one of his country's leading Aids specialists. Founder and Secretary-General of the Indian Health Organization, he is also chairman of Asian Solidarity against Aids, a network of non-governmental organizations in Asia.

The HIV infection made a late entry into Asia, and the continent is still a low-prevalence region for Aids. In the last few years, however, there has been an HIV explosion.

Using the parameter of "doubling time" (the time required for a twofold increase in cases) to interpret the trend of reported Aids cases to WHO during 1984-1993, the Aids scenario for Asia looks grim.

At present Aids cases in Asia are underdiagnosed, underreported and ill treated. Fear and ignorance are compounding the difficulty of controlling the spread of the virus. In most places there are no protocols to follow up HIV-infected people: counselling, outpatient or inpatient care services are far from developed, not to mention prenatal HIV screening. Even today, most health care professionals refuse to treat patients with HIV/Aids and, unfortunately, even the international scientific community and major donors delayed giving their attention to Asia.

Despite the growth of HIV/Aids in Asia, there has been no major focus on the problem by political leaders. In Zambia, when the then President Kenneth Kaunda's son died of Aids, he publicly pledged support to Aids control pro-

grammes, justifying his action as the best possible homage to his departed son. All too often, Asian heads of state regard Aids as too insignificant an issue to be treated as a priority.

The sexual mode of HIV transmission predominates in most Asian countries, and commercial sex workers (CSWs) and their clients play an important role in the pandemic. In recent years the increase in infection in CSWs in Thailand, India, Cambodia and Nepal has been dramatic.

Project Saheli: Aids prevention through peer education

During 1987, when a fairly high prevalence of HIV was noticed in Nairobi CSWs, the Indian Health Organization (IHO) warned that if the Aids threat was not taken seriously, Bombay and other Asian cities would face the Kenyan capital's fate. The warning was widely ignored.

Since then the IHO has developed a peer education programme for sex workers in Bombay which has reduced HIV incidence and widened the doubling time from eight months in 1988 to four years in 1993. Known as "Project Saheli", the campaign reaches out to 10,000 CSWs through 350 peer leaders and distributes 1 million condoms every month in Bombay and four other cities. It has no sustained funding.

After evaluating various approaches for condom promotion such as social marketing and door-to-door vending, we opted for the "peer education" model for our work among CSWs. The organization of prostitution is multi-layered and the CSW is at the lowest end of the scale ruled by brothel managers and brothel owners. To intervene effectively, we must influence all levels of the hierarchy, with the ultimate goal of empowering the CSW to change her destiny. We have a three-tier system of peer leaders: one Saheli (friend) from among the sex workers for every twenty-five girls; one Tai (sister) from among the managerial cadre for every ten Sahelis; and one Bai (mother) from among the brothel owners for each major area.

"I am HIV-positive. I found out three years ago. It was my birthday present. . . . For the last three years I have made no plans. I had no prospects for the future. Now I must try to think that maybe there is a future and that I'm not just at death's door. It's taken me three years to get that far."

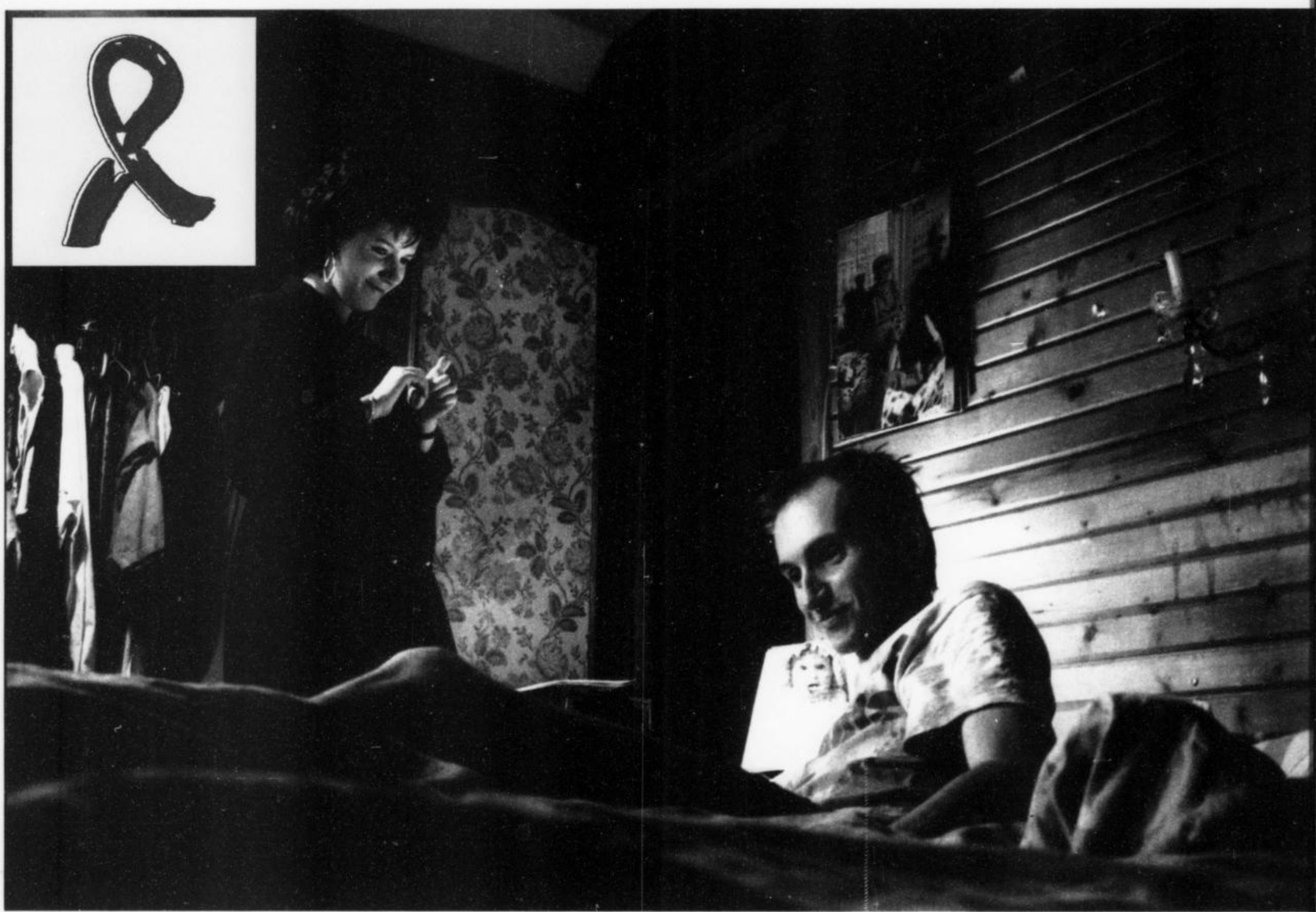
While the Saheli and Tai are paid a fee for their time, the Bai, usually an affluent lady from their community, is not paid. The payment is more than just an incentive, it gives their work respectability, as the CSWs realized for the first time that they could earn money through other means than prostitution. They are given training on the use and distribution of condoms, techniques for client negotiation and STD/Aids prevention through personal interviews, group discussions, lectures, audiovisuals and role playing. their task is to educate CSWs about Aids, STDs and safer sex, to distribute condoms, escort sick CSWs to mobile clinics or hospitals and to give support to infected CSWs. They act in street plays to educate the public and address public meetings, workshops and conferences, and take part in television programmes.

To help CSWs to express their aspirations and voice their concerns, hopes and fears, a bilingual quarterly, *Sakhi-Saheli*, is published. The bulk of the information published is sent in by CSWs themselves. They have started planning for their children and are saving money for a future they are looking forward to. Their health has also improved dramatically. Doctors' fees have fallen. Apart from a marked decrease in common STDs, the most valuable fall-out has been a perceptible increase in the doubling time of HIV infection.

In the absence of a vaccine and cost-effective, widely acceptable therapies, the only means of blocking HIV transmission is to educate and encourage people to adopt protective behaviour. In view of the success rate achieved in a number of developed nations in containing HIV/Aids, the situation is not hopeless if prompt action is taken.

Opposite page, free distribution of condoms to Bombay prostitutes.

Below, a sketch performed in the street by Jamshedpur (India) students to alert passers-by of the risks of HIV infection.



EUROPE: The political dilemma

by Rita Süssmuth

Can the epidemic be contained more effectively by coercion or by a liberal policy based on education and individual responsibility?

Aids is a tough test for democracy. In all the European countries—especially in the early days of the epidemic in the mid-1980s—demands were voiced for the surveillance of risk groups and systematic testing so as to identify carriers of the infection and isolate them in special institutions, such as "sidatoriums" (the word is taken from the Aids programme of the French National Front party) or banish them to uninhabited islands (advocated by some isolated Scandinavian groups).

The proponents of these radical "solutions", who were admittedly only supported by a minority, hoped to protect themselves and society at large against the risk of infection by introducing these screening and isolation procedures. However specific these problems may have appeared to Aids, they were in the final analysis far more general. The Aids debate was and remains essentially no more than a new version of a constantly recurring question: to what extent does the end justify the means? Are the means appropriate to the ends and are they legitimate and effective?

Aids confronts our democracies with a radical alternative: either we take up the challenge of Aids courageously and develop new concepts to consolidate the links between indi-

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was the Federal Republic of Germany's Minister for Youth, Family Affairs and Health from 1985 to 1988. She has been President of the Bundestag, the German parliament, since 1988.

vidual and collective responsibility and freedom—or we take action under statutory provisions on epidemics, bringing the illusion of safety associated with the misguided expectation that detailed provision for screening can bring effective protection. But if a test is administered today, what happens tomorrow?

The role of the politicians

Aids disturbs politicians by confronting them with new problems, with conflicting statements by experts, contradictory demands and decisions whose consequences are serious in the extreme. Be that as it may, action must be taken despite all the uncertainty and the provisional nature of our knowledge. The special responsibility of politicians consists precisely in taking decisions in crisis situations and submitting them to a constant critical reappraisal.

Comparisons in Europe point to effective control of the epidemic especially through prevention in countries such as the United Kingdom, Sweden and Germany, which adopted an active Aids policy at an early stage and in which the topic was the subject of detailed debate in parliament. Countries in which decisions were taken late in the day (Italy, Spain) and in which parliament was not effectively involved show significantly higher Aids figures today.

The reason for this relationship resides in the legitimacy which Aids prevention acquired through a broadly based and frank discussion at the highest level. The resulting political decisions, which must be taken at governmental level, are binding on all the public bodies. They also constitute guidelines for the action of the professional groups, educational establishments, associations and organizations set up under private law which are engaged in the fight against Aids.

"You mustn't say, 'I live better'—that doesn't mean anything—but simply, 'I am alive.' Wherever I've heard the word 'better', it really means 'differently'. My life has been whittled down to its essentials. But in absolute terms it is not 'better'. Just the opposite. It's more burdensome, more painful because you're closer to the reality of things. You live differently."

Aims and methods

As with any other infectious disease, the primary aim of Aids prevention must be to reduce the number of new cases of infection. The question which gave rise to serious controversy in western Europe concerned the ways and means of attaining this goal:

- Should authoritarian governmental action be taken, e.g. compulsory testing where there is a suspicion of Aids, with reporting of the names of the victims and isolation of the virus carriers, as with the epidemics and plagues of old?

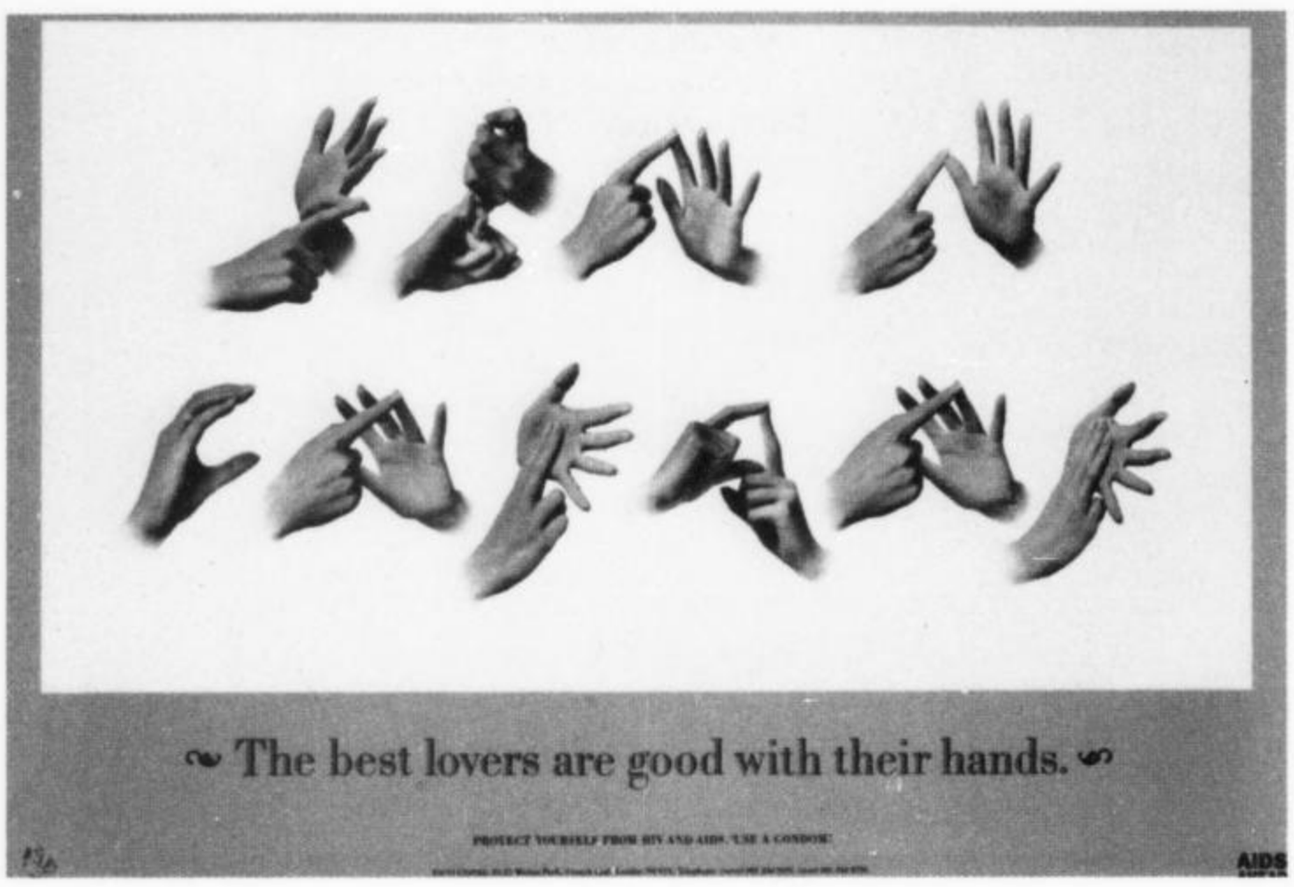
- Or should the aim be to bring about a change in individual behaviour among the virus carriers and the population at large, following the model of prevention of cardiac and cancerous diseases which stem largely from individual lifestyles?

The controversy intensified once the HIV antibody test became available because it was now possible to introduce compulsory measures with the help of the biological screening test. The political debates on the use of HIV tests led to a broad consensus in all west European countries between the health politicians, public health and Aids specialists and the representatives of the affected groups. It was agreed that Aids could not be halted without the active co-operation of the risk groups and virus carriers and that their willingness to co-operate depended on their confidence in the underlying social security system. Quite rightly, authoritarian strategies were therefore not adopted in Aids policy.

The clear political commitment in favour of a voluntary fight against Aids based on education and self-responsibility encountered some opposition.

Opposite page, a young Aids patient in Paris receives care at home (1993).

Left, a French Aids prevention poster targeted at young people.



Above, a British poster encouraging the use of condoms. Below right, a German poster urging young people not to close their eyes and pretend that Aids does not exist.

First of all, the problem arose as to whether, and if so how, the phenomenon of Aids could be incorporated into existing statutory provisions on epidemics. The classification of Aids differed from one country to another, but as a general rule it was not included within the compulsory provisions on the control and reporting of transmissible diseases. However, the penalties for punishable offences, such as unprotected sexual intercourse by a person infected with Aids who is clearly aware of the inevitable risk of infection, were applied or made even more severe in most countries.

To implement a liberal prevention strategy, it was also essential to make practical means such as condoms, sterile syringes and sex education material widely available. Hitherto this had not been a task for the state and the new measures gave rise to protests on moral grounds.

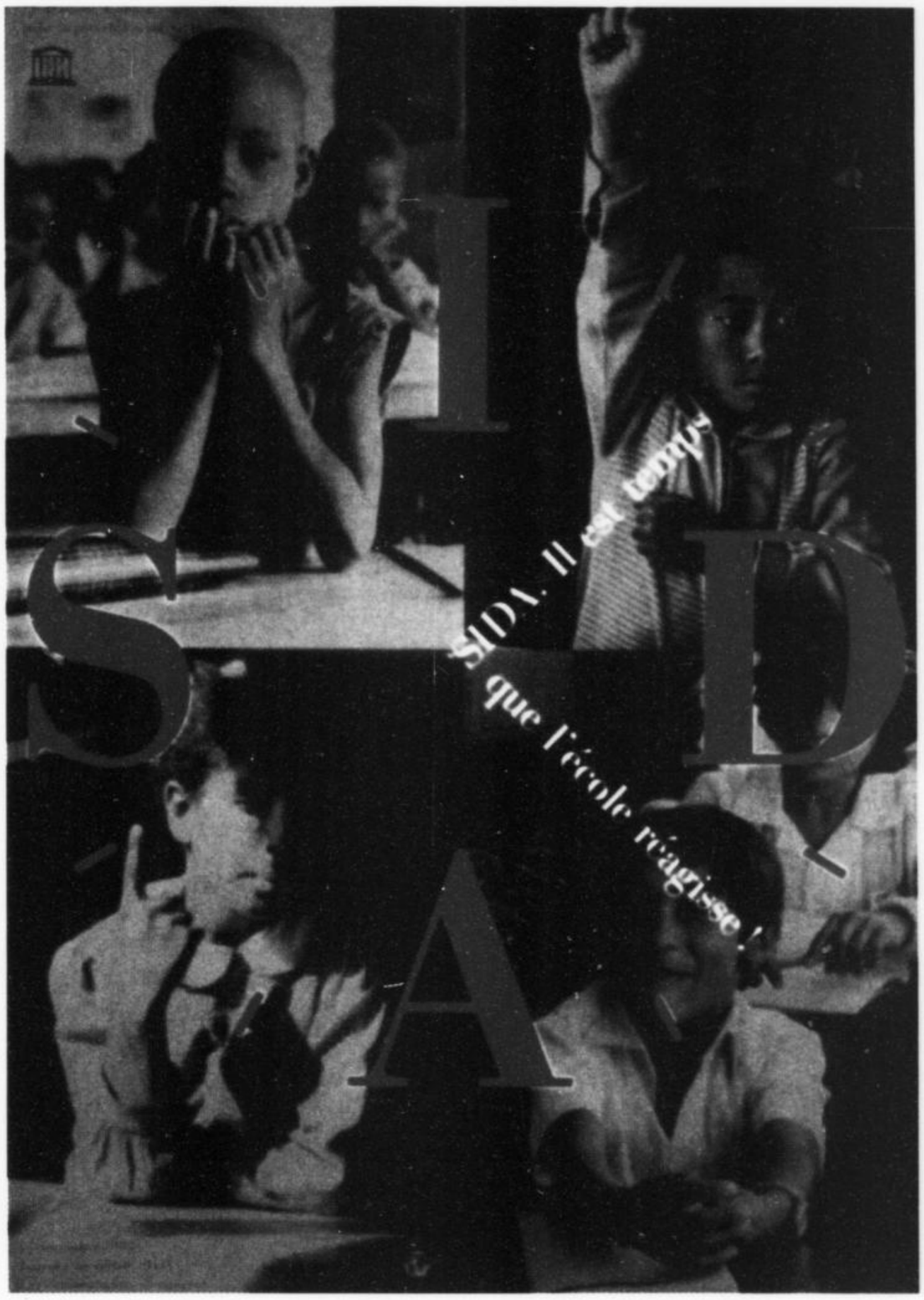
Finally, it was essential to provide the population with comprehensive information on the risk of infection and means of protection against it, with no moral prejudices and in readily understandable language. Publicity for condoms based on specific topics such as "healthy and happy sexuality" (Sweden and Norway) or target-group oriented advertising, e.g. an appeal for a sense of responsibility in partnership (Italy, the United Kingdom, Germany) brought better results than publicity couched in general terms and intended "for everyone".

All in all, it has been found that relevant political decisions only gain social acceptance if they are founded on a frank and constructive dialogue with representatives of the interests of risk groups.

Solidarity with Aids victims and persons infected with HIV requires extensive medical and psycho-social assistance, acompanied by protection against social discrimination. It must include the promotion of scientific research and provide suitable compensation for the victims of infected blood products. To put these requirements into effect, substantial public funds have been earmarked for the fight against Aids, despite the fact that European health systems have been constantly obliged to hold their costs within strict limits since the early 1980s.

Efforts were made to protect the social rights of Aids victims in order to preserve their opportunities on the labour market, their access to insurance and their normal involvement in social life. Co-operation between state bodies and private self-help organizations, hospitals and home care, was not only of medical and preventive importance, but also pursued the aim of avoiding as far as possible social discrimination against the victims of Aids. The "streetworker programme" in Germany and The Netherlands, the militant pilot actions pursued by the French humanitarian doctors' organization Médecins du Monde and the provision of free health insurance in

To implement a liberal prevention strategy, it is essential to make practical means such as condoms, sterile syringes and sex education material widely available. Until now this has not been a task for the state.



"It's time for schools to act."
A UNESCO poster for World Aids Day, 1 December 1992.

France for beneficiaries of the RMI (minimum income) programme, the free access to medical care and health counselling under the British National Health Service, and the development of private therapy groups, often associated with church organizations, for HIV-infected drug addicts in Italy, are examples of European responses to the special problem of Aids victims who not infrequently become social outcasts.

The political lesson of Aids

My own personal experience as the former health minister of the Federal Republic of Germany between 1985 and 1988, i.e. in the years in which the Aids debate was particularly vociferous, allows me to draw three conclusions:

Firstly, the politicians have had to learn to listen to marginal social groups such as homosexuals, drug addicts and prostitutes, to understand their special problems and develop forms of co-operation with them in order to achieve effective prevention. They have been obliged to learn how to deal in a pragmatic manner with taboo-laden topics such as illness and death, different forms of sexuality and drug addiction.

Secondly, the development of our modern social state is inconceivable without special health protection measures. All state measures designed to fight Aids must be taken in a spirit of respect for human freedom and individual dignity, without discrimination on grounds of their way of life, origin and position in society.

Thirdly, if Aids strategies are to have any real prospect of success, they must focus on education and the development of individual responsibility. To check the further spread of HIV we should therefore not count on authoritarian statutory measures but rather appeal for a responsible individual approach to the hazards of Aids. ■

Table 1. Reported cases of Aids per million inhabitants

	31 December 1987	*31 March 1994*	*Rate of increase*
Sweden	19.4	115	5.9
Spain	20.2	619	30.6
United Kingdom	21.6	155	7.2
Italy	24.6	376	15.3
Germany*	27.4	137	5.3
France	55.3	506	9.1

* The particularly good position of Germany in terms of the rate of increase is partly explained by reunification in 1990: the former German Democratic Republic, which still has a very small number of Aids cases (like all ex-communist countries) has brought about a statistical reduction of the rate for Germany as a whole. Without reunification, the number of Aids cases in Germany would have been similar to that in the United Kingdom.

Table 2. National profiles of the epidemic. Acute Aids cases by source of infection (adults) 31 March 1994

	Total no. of cases	*Homosexuals %*	*Injecting drug users (IDU) %*	*Homosexual IDU %*	*Heterosexuals %*	*Blood industry %*	*Unknown %*
Spain	24,202	15.6	70	2.2	7.6	2.8	5.8
Italy	21,770	14.6	66.1	2.3	10.3	2.2	4.5
France	30,003	48.8	23.8	1.5	15	5.8	5.1
Sweden	1,001	65.2	9.9	0.8	9.3	7.3	7.5
Germany	11,179	69.1	13.1	0.9	5.9	5.6	5.4
United Kingdom	9,025	74.9	5.4	1.6	11.6	5.4	1.1

New therapeutic approaches

by Jean-Marie Andrieu

By slowing down the activity of the immune system it may be possible to slow down the development of the disease

The human immunodeficiency virus (HIV) infects a specific category of white corpuscles, the CD4 lymphocytes. It causes a biological disease typified by the gradual disappearance of these CD4 lymphocytes from the lymphoid tissue. Clinically speaking, this disappearance takes place silently between three and fifteen years after infection. When the CD4 pool is severely depleted, repeated opportunistic infections occur which eventually lead to death, even if they are treated with antibiotics. In order to combat replication of the virus, and the consequent destruction of the CD4 lymphocytes, researchers have turned their attention to the antiretroviral molecules, the chief of which is zidovudine (AZT). For a period generally lasting no more than a few months this medication slows down viral replication and thus the depletion of CD4s.

The phenomenon of activation is a point of capital importance in understanding the loss of CD4 lymphocytes. It is a process encompassing a phase of cellular proliferation accompanied by the emission of biological molecules and followed by the death of the cells. Death is either spontaneous or caused by killer cells according to a biological process called apoptosis. Activation thus causes excessive cellular consumption. If it is accepted that cell renewal in the immune system is a finite process, it is clear that marked chronic cell consumption might exhaust the immune system. It has long been known that the more biological symptoms of activation there are, the more quickly infection develops. The activation level of immune cells results from individual genetic diversity and from environmental factors. Thus the high number of pathogenic agents present endemically in Africa and in the tropical regions are certainly constant factors in the activation of the immune system, which would explain the faster development of HIV infection in Africa.

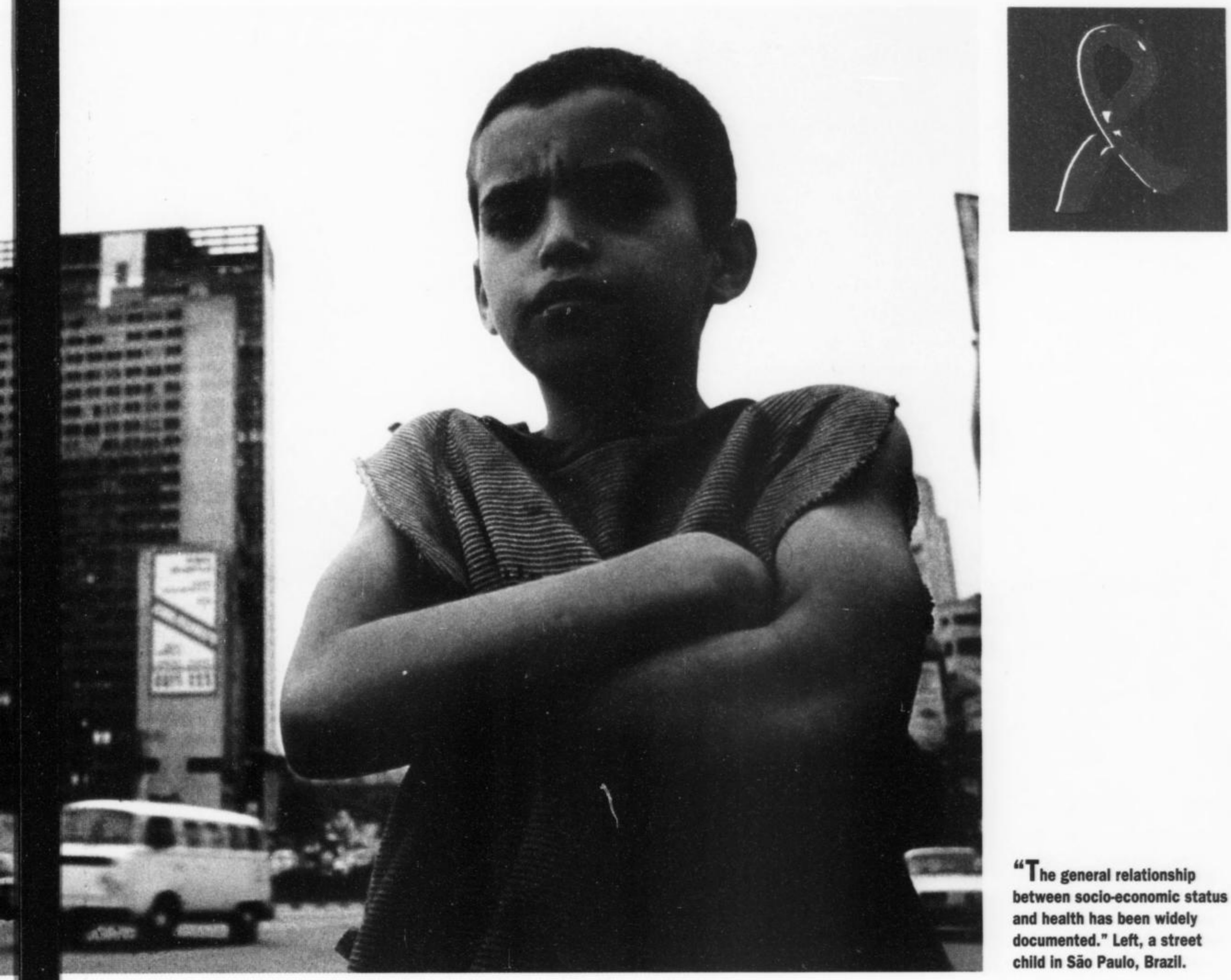
It can thus be seen that forms of treatment that partially inhibit excessive activation of the immune system may paradoxically slow down CD4 activation and thereby preserve the CD4 pool. Cyclosporine and glucocorticoids are medication of this kind. We have studied their effects on a small number of HIV-infected patients*. Among the HIV-infected patients treated over a one-year-period with a small dose of glucocorticoids (0.5 mg/kg, then 0.3 mg/kg), a decrease in the activation of the immune system was observed as well as a stabilization of the concentration of the virus and an increase in the rate of CD4 associated with a decrease in their apoptosic rate. Nevertheless, a great deal of caution is called for in exploring this kind of treatment. We hope that in the near future Aids research groups will pay a good deal of attention to these new therapeutic approaches. Before considering its therapeutic use, the benefit/toxicity relationship of this kind of treatment must be evaluated with great precision. ■

* *Journal of Infectious Diseases*, March 1995;
AIDS, January 1995; *Immunology Today*, January 1995.

JEAN-MARIE ANDRIEU,
a French haematologist, heads the tumour immunology laboratory at Laennec Hospital in Paris.

Health

Respect for human rights is coming to be seen as a fundamental part of public health policies



"The general relationship between socio-economic status and health has been widely documented." Left, a street child in São Paulo, Brazil.

and human rights

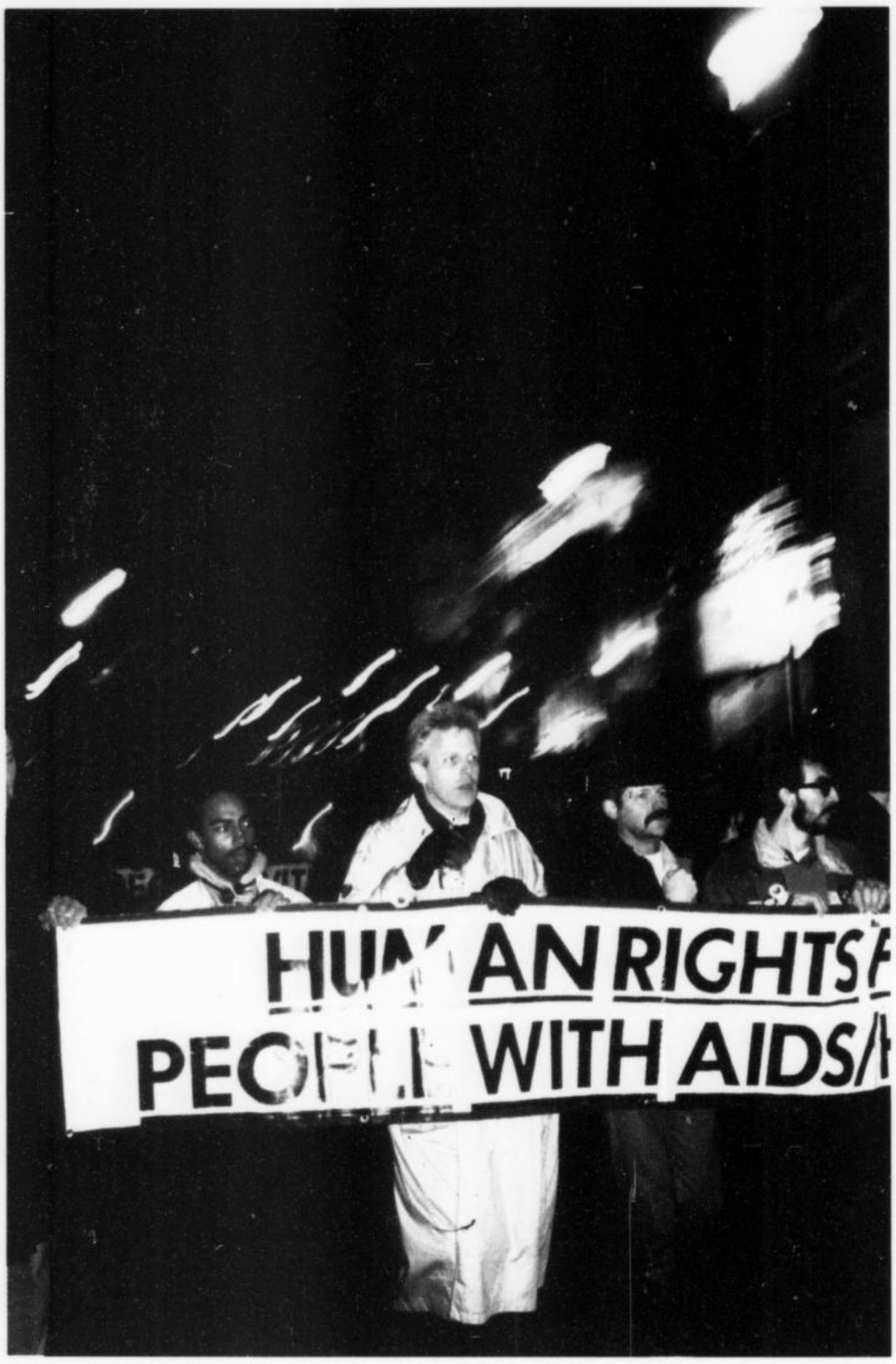
by Jonathan Mann

The first major influence on health science on the eve of the twenty-first century is the phenomenon of globalization, the enormously expanding and intensifying movements of people, goods and ideas around the world. The Aids epidemic has accelerated an appreciation of global vulnerability to new disease pandemics.

Tourism is symbolic of the transnational character of the modern world, for it constitutes one of the world's largest industries and is inextricably linked with the history of infectious agents and epidemic disease. Mass tourism, with its characteristic heavy influxes during short periods, overloads sanitary infrastructures, and outbreaks of disease are most likely during these periods.

The Aids pandemic has been a shock, strongly challenging the old view of the world as composed of isolated communities and illustrating clearly the modern world's vulnerability to global spread of infectious agents. The pandemic is expanding relentlessly, and may well involve over 100 million people by the end of this decade. This says much about our limited collective capacity to deal with global health problems.

The emergence of new microbial threats to world health is inevitable, yet our ability to detect and respond to such threats with reasonable speed remains very limited, slow and haphazard. Current international health regulations are clearly based on an old, nation-state definition of "inter-national" rather than global



A human rights demonstration in front of Lighthouse, a London hostel for Aids sufferers.

health. A new global surveillance strategy must draw on a broader, ecological view of health and disease.

An ecological view of health

The definition of health itself is critical, for how we define a problem will determine what we do about it. The most widely used modern definition comes from the World Health Organization (WHO) and states that: "health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." Through this definition, WHO has helped to move health thinking beyond a perspective which focused on diseases, disabilities and causes of death, to the more positive domain of "well-being". The definition highlights the importance of health promotion, described as "the process of enabling people to increase control over, and to improve, their health". Thus the modern concept of health emphasizes the broader, societal dimensions of health.

These changes in thinking about health have been complemented by changes in the practice of international health research. In HIV/Aids prevention, for example, global exchange of information has been unprecedented and useful. Inherent in this approach is the idea that when facing a problem like HIV/Aids, every society and environment may make useful contributions.

A second aspect of global learning involves how research is carried out. Early in the pandemic, international research was dominated by so-called "safari" or "parachute" research, in which scientists from industrialized countries arrived, took specimens and left to publish their results. These early projects were rarely collaborative in any meaningful sense and were part of a pattern inherited from colonial days. Increasingly, however, it became clear that both the ethics of good research and the capacity to answer the important questions depended on establishing genuine international collaboration.

The human rights revolution

As well as acquiring an increased capacity to think in integrated, ecological ways about health issues, the world in which health research is carried out has been changing in another critically important way. This involves the most hope-filled idea in the world today—that of human rights.

Among the fundamental characteristics of modern human rights are the following: they are rights of individuals; they inhere in individuals simply because they are human; they principally involve the relationship between the state and the individual; and they apply to all people around the world.[1] Despite tremendous controversy, especially regarding the philosophical and cultural context of human rights as currently defined, a shared sense of concern, a vocabulary and a set of human rights practices are increasingly becoming part of community, national and global discourse.

The human rights revolution strongly affects both the goals and content of efforts to promote and protect health, and in this way has a significant influence on the goals and practices of health research. In the first instance, health policies, programmes and practices have important impacts on human rights and dignity which must be avoided or minimized as far as possible.

"Veronica is seven years old. Her blood test shows that not one T4 cell remains; her immune system is at zero. When she was five months old she had a pathological lung condition, two cardiac arrests and an effusion in the right lung. But she recovered, which shows how determined she is. She has an incredible will to live. Now she's in wonderful shape. She's had a lot of problems, one thing after another: ear infections, lung infections and the like, until she started being treated with AZT, which has an effect. We're lucky she can tolerate it. . . . She goes to school regularly like other little girls, and works hard. She's even above the class average, because children who spend a lot of time in hospital are more mature than the others. We tell ourselves that there have always been epidemics and that some people have survived. Why shouldn't we be among them?"

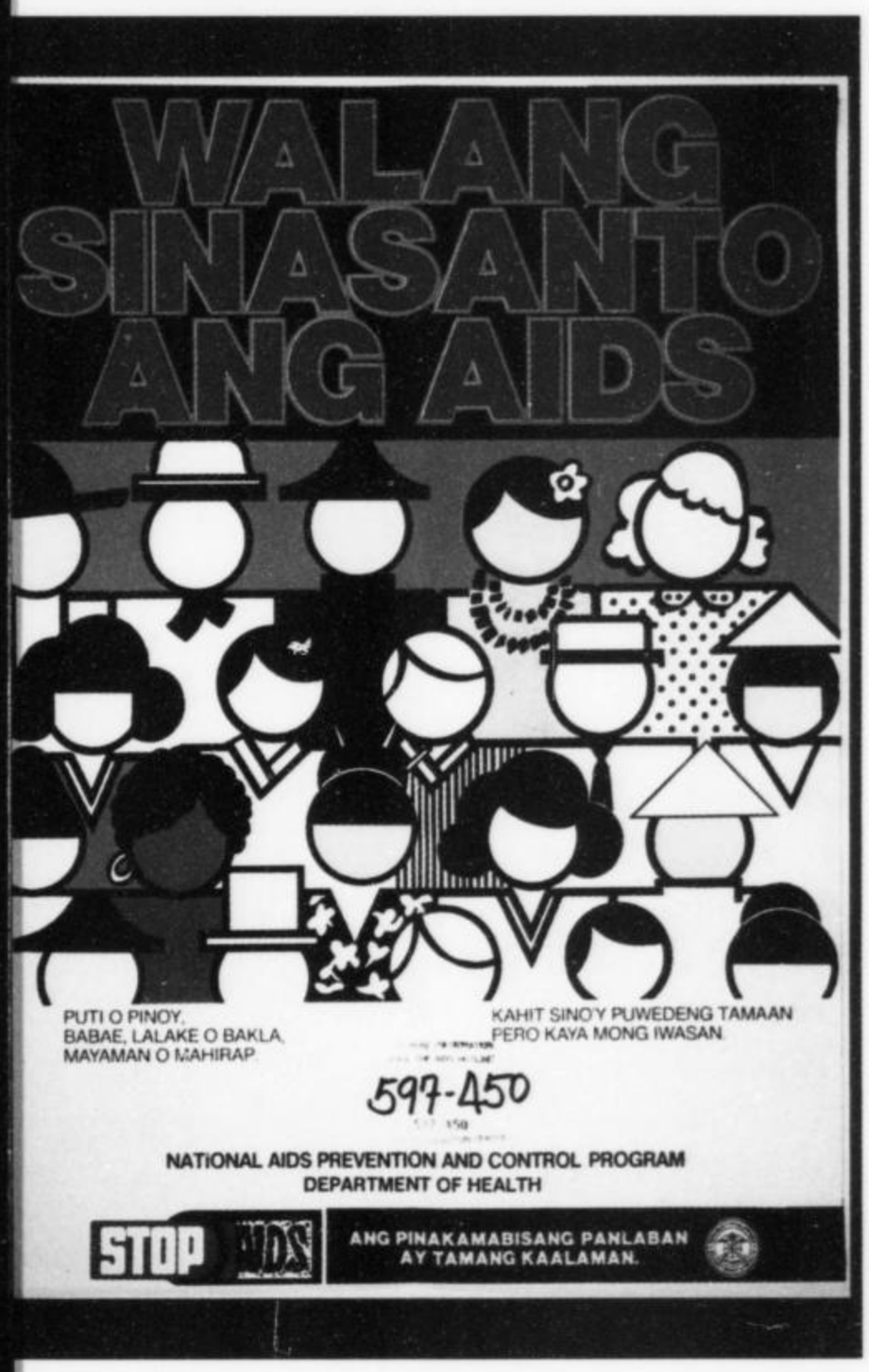
For example, collecting information from individuals, such as whether they are infected with HIV, or have breast cancer, or have a genetic predisposition to heart disease, can clearly burden individual rights to security of person and of privacy. Health status or health behaviour information (such as sexual preference or history of drug use), if misused by the state or made available to others, can also result in grievous harm to individuals and violations of many rights, leading to (as has occurred with information about HIV infection) cruel, inhuman or degrading treatment, arbitrary detention or exile, attacks upon honour and reputation, limitations of freedom of movement, violations of the right to marry and found a family, and restrictions of the right to work and to education.

Appreciation of the impact human rights violations can have on health has also changed. These impacts are not limited to such obvious cases as torture, imprisonment under inhumane conditions, or summary execution and "disappearances". It is now evident that violations of many, if not all, human rights may be associated with negative effects on health. When cigarettes are marketed without governmental assurance that information regarding the harmful health effects of tobacco smoking will also be available, it can be argued that the right to information is violated. The health cost of this violation in terms of preventable illness, disability and premature death, including excess cancers, cardiovascular and respiratory disease, can be quantified. A similar example involves governmental withholding of valid scientific health information about contraception or regarding measures to prevent infection with HIV.

Modern concepts of health recognize that underlying "conditions" lay the foundations for optimal achievement of physical, mental and social well-being. Given the fundamental importance of these conditions, it is remarkable how little priority has been given to their identification, modes of action, relative roles and possible interactions.

The most powerful analysis has focused on socio-economic status. The general relationship between higher socio-economic status and better health has been well and widely documented. Yet this analysis has at least two important limitations. First, it cannot adequately account for a growing number of discordant observations. Second, while health workers readily acknowledge poverty as a critical issue, it poses an overwhelming challenge with which they are neither trained nor equipped to deal: the identification of socio-economic status as an

"Aids spares nobody", says this poster from the Philippines' Department of Health.



JONATHAN MANN,
of the United States, was the founding director of the World Health Organization's Global Programme on Aids (1986-1990), and is now the François-Xavier Bagnoud Professor of Public Health and Human Rights at the Harvard School of Public Health (U.S.A.). He is also Professor of Epidemiology and International Health at Harvard, and Director of the International Aids Center of the Harvard Aids Institute.

The dialogue between health and human rights evolved dramatically. Initially, health and human rights supporters clashed as attempts were made to control Aids through restrictive measures such as mandatory testing, quarantine and isolation.

"essential condition" for good health paradoxically may encourage passivity and hopelessness—and therefore paralyse action.

A global Aids strategy

However, alternative approaches to identifying "essential conditions" for health are emerging. Experience with what can arguably be called the world's first truly global strategy, created by WHO to confront Aids, suggests an analytic approach based on modern human rights.

The dialogue between health and human rights evolved dramatically. Initially, health and human rights supporters clashed, as health officials and politicians sought to control Aids through a series of restrictive and coercive measures from the standard lexicon of public health, such as mandatory testing, quarantine and isolation. This aggressive response was spurred by a climate of fear, compounded by the marginalized nature of the groups most visibly affected—homosexual men and injecting drug users. Human rights activists resisted these coercive public health approaches. However, as experience in HIV prevention began to accumulate, health officials came to realize that discrimination and coercion were interfering with the effectiveness of the information/education and service programmes, by driving those most needing the services and support away.

The idea that respecting human rights would be useful, or even essential, in order to achieve a public health goal was quite a novel idea, but it came from practical experience rather than theoretical considerations. Accordingly, a public health rationale for protecting human rights and dignity was developed.

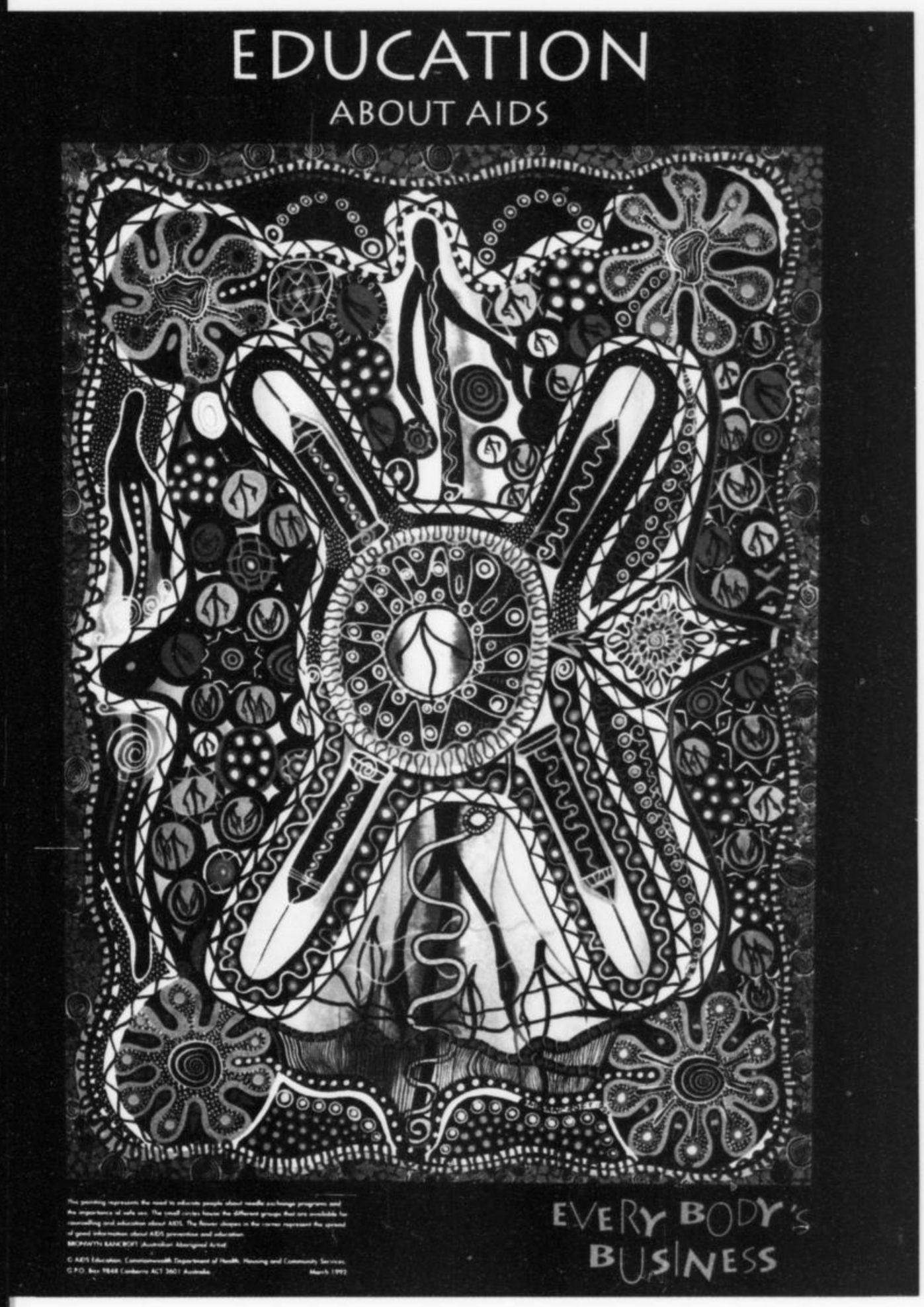
However, while the WHO model works extremely well at the pilot project or community level, it has neither been able to become widely disseminated nor has it influenced in any substantial manner the natural history of the pandemic. More than ten years after Aids was discovered, and despite the energy, courage and creativity of the fight against Aids during the past decade, it is clear that current efforts are necessary but will not be sufficient to bring this global epidemic under control.

Social discrimination and the spread of HIV

Fortunately, through the experience of the past decade, it was discovered that the spread of HIV is strongly determined by an identifiable risk factor. We are accustomed, in classical medical and epidemiological thinking, to consider risk factors such as sexual behaviour, or drug-taking or cigarette smoking, as individual. Yet we gradually recognized a societal risk factor for vulnerability to HIV infection in the scope, intensity and nature of discrimination which exists within each community or country. We are not speaking principally about discrimination against already HIV-infected people and people with Aids, which is one tragic effect of the pandemic; here we are considering those forms of discrimination in society which antedated the arrival of HIV. The damage which discrimination does to HIV prevention was recognized as occurring at two levels.

First, discrimination undermines and interferes with each component of the programme-based approach to HIV prevention. People who are discriminated against are much less likely to receive information and education adapted to their needs. Actually, their needs are likely to remain unrecognized altogether. For example, deaf people have received little or no information about Aids adapted for their use. Marginalized groups are also much less likely to have access to the health and social services needed for HIV prevention. People who are discriminated against often have difficulty organizing as a community. They are less likely to participate effectively in debates about Aids policies or programmes, and more likely to be subject to coercive and punitive measures. Put together, the

A poster for a conference on HIV/Aids and related problems in Aboriginal communities of Canada.



A poster by Bronwyn Bancroft, an Australian Aborigine artist, illustrating the need for information about needle-exchange programmes and the importance of "safe sex".

positive benefits of the programme-based approach are least available to those who need them most—because of societal discrimination.

But there is a second and more fundamental relationship between societal discrimination, vulnerability to HIV and HIV prevention capacity. The fundamental basis of HIV prevention is the promotion of each person's capacity to learn about and to apply this understanding fully and freely in their life. Yet for each of us, social status and role critically influence and constrain our choices. Thus the debate about using a condom is very different for a young person with hope for a bright future through education and a young person with little realistic expectation of a meaningful job. Put another way, when we assume that people can simply choose and leave them to choose, we are assuming that everyone has a choice or a similar realistic range of choices.

Male domination—a threat to public health

In many Third World countries, even when the woman knows her husband to be HIV-infected, she may be powerless to protect herself. For divorce, entirely under the control of the man, will mean civil and economic death for the woman.

In this context, therefore, it is entirely logical and appropriate that women's organizations are seeking to change the laws governing property distribution after divorce, as well as laws on marriage and inheritance—to help prevent HIV from spreading! These measures, by giving the woman a choice and a voice in negotiating sexual relations, are likely to be more effective in preventing HIV spread than producing more attractive brochures or customizing brand names for condoms. Again and again, we have seen that discrimination creates an environment of increased risk for women—linked directly with their unequal role, rights and status. (It is in this context, as well as considering reproductive health, sexual violence and many other issues, that we can say that male domination of society is a threat to public health).

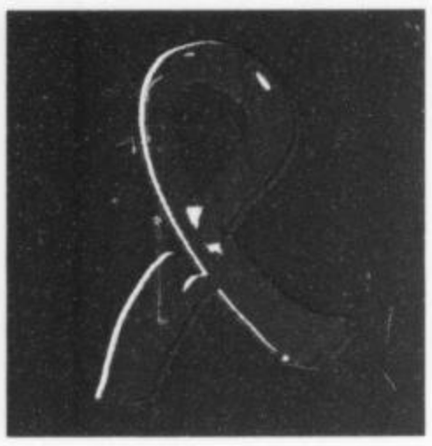
In short, we have learned that the HIV pandemic flourishes where individual capacity to learn and to respond is constrained. The major way in which this capacity is constrained is by belonging to a group that is discriminated against, marginalized, or stigmatized. This suggests that to the extent that societies can reduce discrimination and promote respect for the rights and dignity of all their members, they will become increasingly successful in preventing HIV transmission. To this extent, they will be uprooting the HIV/Aids pandemic rather than simply addressing its surface features.

This leads to the larger hypothesis that the "essential conditions" for health—the societal determinants of health status—are better defined by modern human rights than by the traditional, biomedical, physical health-related measures and analyses of health experts. Thus, a strategic approach to the promotion and protection of health is inextricably linked to efforts to promote respect for human rights within each society and globally. ■

1 The specific rights which form the corpus of human rights are listed in several key documents. Foremost among them are the Universal Declaration of Human Rights, the United Nations Charter, the International Covenant on Civil and Political Rights and the International Covenant on Economic, Social and Cultural Rights, which constitute what is often called the "International Bill of Human Rights".

The search for a vaccine

by Marc Girard



The development of a vaccine against HIV raises highly complex scientific and economic problems

The development of a vaccine to prevent infection with the Acquired Immunodeficiency Syndrome (Aids) presents biomedical research with an urgent and serious challenge.

Simple prophylactic measures that could prevent transmission of HIV, such as the screening of blood donations, the proper sterilization of surgical equipment and needles, or the use of condoms, are often not a practical proposition in developing countries because of their cost and/or because they meet with behavioural or cultural barriers that are very difficult to overcome. A vaccine against HIV is therefore badly needed. (Vaccines are the most efficient known way of dealing with virus diseases.)

However, in spite of almost ten years of intensive research, HIV vaccines still elude us. Nobody can be sure when a vaccine will be available, nor even if there ever *will* be a vaccine to cope with the seemingly endless variation of HIV and its ability to hide and persist in the body of infected individuals.

A persisting disease

Why can we not produce a vaccine against HIV by using the classical methods that have been so successful in developing vaccines against "classical" virus diseases? The answer to this question lies in the very properties of HIV and in the fact that Aids is a persisting disease. HIV is a retrovirus and as such inserts its genome into the chromosomes of the cell it infects, then transmits it as a piece of chromosome from one cell generation to the next.

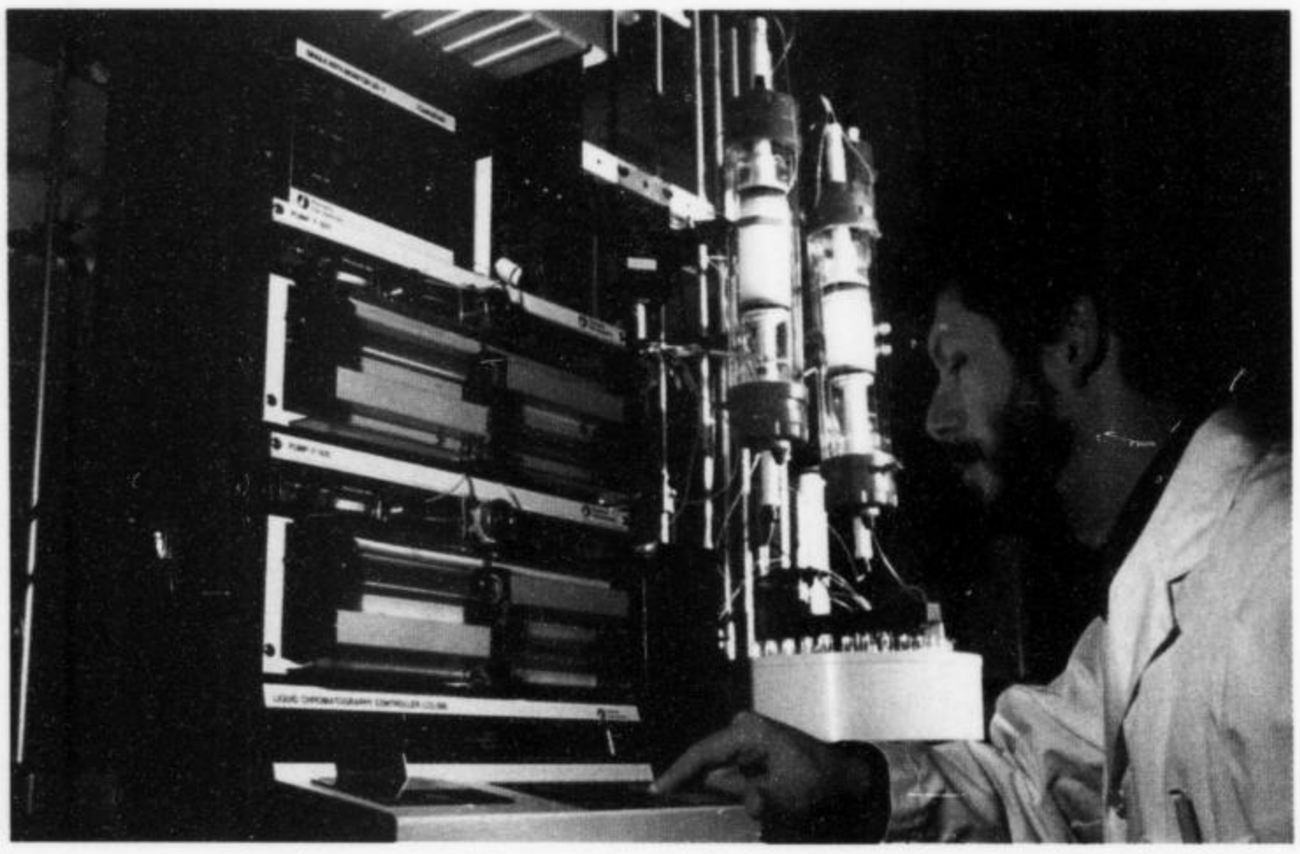
The HIV virus actually does even "better" than most retroviruses. Classical retroviruses grow at low levels in infected cells, and cell growth is usually compatible with virus production: the virus does not kill the cells. HIV, however, has evolved a series of accessory genes that allow it to grow very rapidly once it is activated and to kill the cell after large numbers of progeny virus particles have been produced. It has been estimated that an asymptomatic HIV-positive individual can produce more than 2 billion HIV particles per day.

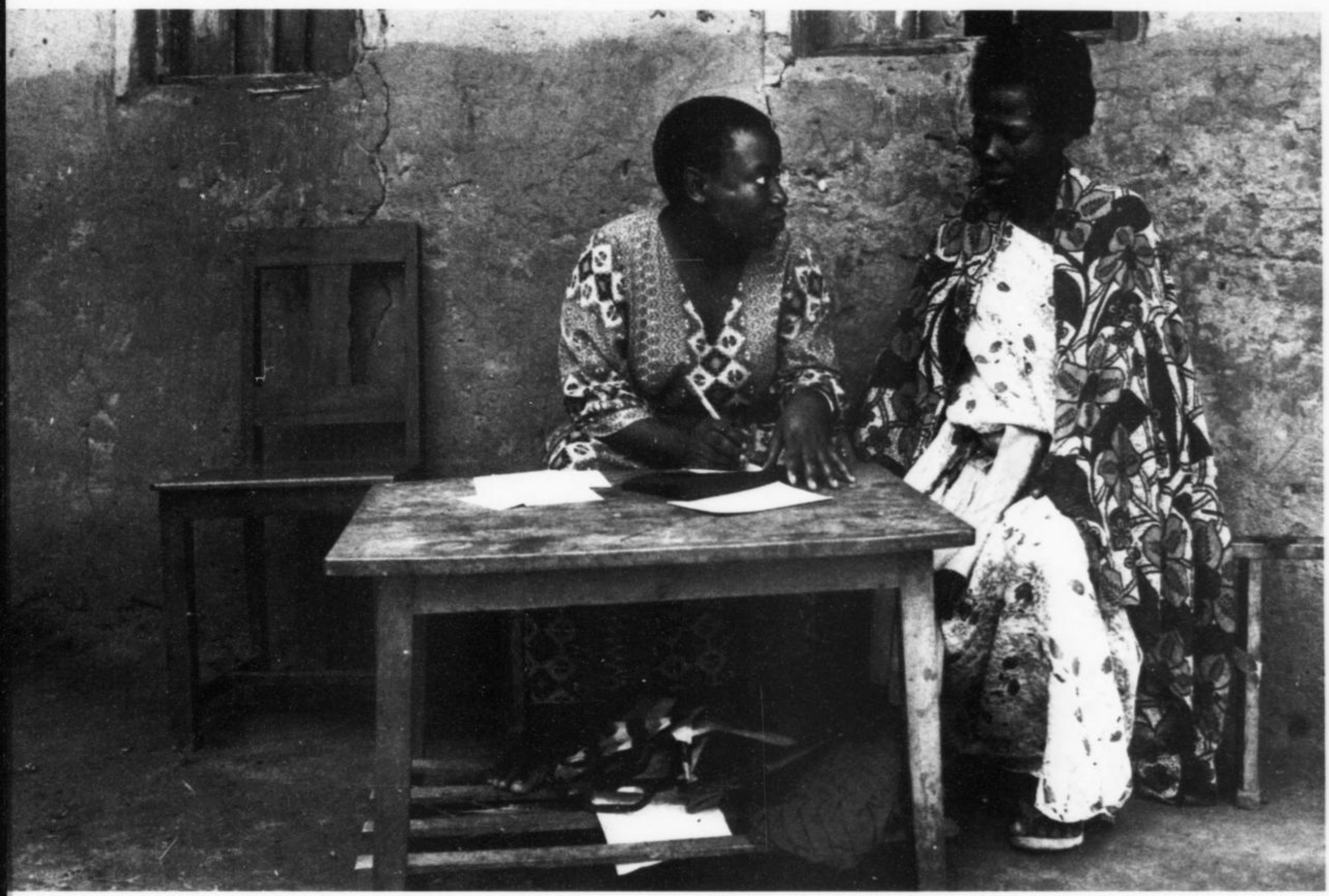
Another reason why HIV persists in the human body is that it can avoid the neutralizing antibody response of the host. The virus can persist in a latent state inside the infected cell, remaining dormant and escaping surveillance by the immune system. It can be transmitted directly from an infected cell to uninfected cells by a process known as cell fusion, in which the virus particles do not come into contact with circulating antibodies. HIV can also be transported by the infected cells to organs like the brain where immune surveillance is minimal.

Finally, the reason why HIV persists so well is that it attacks two of the major players of the immune system, the CD4+ T-lymphocyte (also known as the helper T-cell) and the macrophage. At the same time the virus perturbs the communication network between the different cells of the immune system, leading to profound dysregulation of the immune response.

The HIV virus has also developed a remarkable ability to change, both within infected individuals and from individual to individual. Intrinsically, it is no more variable than viruses such as the influenza virus or the polio virus. But whereas the influenza virus actively multiplies in the infected host for only a few days, HIV

Chromatography (below) is one of many purification steps used in the final stages of production of an experimental anti-HIV vaccine being developed in the United Kingdom.





This Ugandan district nurse (left of photo) visits Aids sufferers and provides them with medication and counselling.

multiplies in its host for years, providing ample time for variants to emerge and be stabilized.

Prototype HIV-1 vaccines

Most of the potential vaccines against HIV-1, the cause of the Aids pandemic, that have been tested in chimpanzees and human volunteers so far have been of what is known as the "subunit" type, consisting of purified viral proteins mixed with an adjuvant. Such protoype vaccines have demonstrated their protective efficacy in animal models such as chimpanzees. More recently it has been shown that immunization with antigens—substances that stimulate the production of antibodies—from one virus strain (HIV-1 MN) could provide protection in chimpanzees from challenge with another virus strain (HIV-1 SF2). This opens the possibility that HIV-1 subunit vaccines may provide cross-protection from infection with different virus strains provided they belong to the same subtype.

Although extremely encouraging, these results are still only preliminary. First of all there has been no test for protection from infection by the sexual route in the animal models. Challenge of immunized chimpanzees has been by intravenous injection of the virus; whereas in nature HIV is essentially transmitted by sexual contact.

Secondly, it has been found that the HIV-1 strains used for challenging the animals are different from the wild HIV-1 strains that are isolated from human patients. The challenge strains have been selected to grow in the laboratory and are easily neutralized by neutralizing antibodies, whereas clinical isolates are not neutralized.

Thirdly, challenge of the animals is usually

MARC GIRARD,
a French biochemist, is Deputy Director and Head of the Molecular Virology Laboratory of Paris's Pasteur Institute. He is a member of the Steering Committees of WHO's Global Programme on Aids (GPA) and of its Global Programme for Vaccines and Immunization.

"When I first knew I was HIV-positive, I thought I had Aids. I thought they were the same thing. It took two weeks' reading before I understood. . . . The doctor who had told me the news said that in these cases the family is the best support. I phoned my family, and my father took it very badly. He scolded me for spoiling the new-year festivities. 'You might have waited,' he said."

done very shortly after a booster immunization, i.e. at or very near the peak of the immune response. The fact that the antibody response elicited by HIV-1 vaccines appears to be transient in chimpanzees raises the question of whether the vaccines would induce sufficient immune memory to provide long-term protection in a natural setting.

Finally, it has not been possible from studies on animals to identify in a reproducible manner correlates of protection that could be used to predict vaccine efficacy. In other words, no yardsticks are available by which to measure potential vaccine efficacy.

Should prototype vaccines be tested on humans?

Before undertaking large-scale (Phase III) efficacy trials in populations at risk, in which a vaccine would be compared in a blind fashion with a placebo, trials must be conducted to assess the safety and immunogenicity (capacity to stimulate immunity) of candidate vaccine(s) in small numbers of human volunteers. Some subunit vaccines have been tested on human volunteers, and shown to be safe and immunogenic. This does not mean, however, that these vaccines would protect humans against infection. To find this out, an efficacy trial is needed.

The National Institutes of Health of the United States recently decided not to proceed in expanding efficacy trials of HIV-1 subunit vaccines, arguing that more predictive scientific data were needed that would make one reasonably confident that protection could be achieved by the administration of the vaccine. Furthermore, it was felt that vaccines based on more than one viral antigen might have a better chance of being effective. Finally, the fear was expressed that individuals taking part in an efficacy trial might perceive that they were protected, which could make them change their behaviour and be at higher risk of HIV infection.

All potential vaccines must first be tested on animals, and so far only chimpanzees seem subject to infection by HIV-1, although they do not develop Aids. This is another of the many difficulties in Aids vaccine research.

Testing a vaccine in a developing country which would not be able to afford it later because of excessive pricing is difficult to accept. It is also clear that the concept of developing a safe, sophisticated but expensive medicine for the industrialized countries and unsafe, unsophisticated but cheap vaccine for the developing countries is ethically unacceptable.

At a recent WHO meeting, however, it was decided that "Phase III efficacy trials . . . could be conducted to obtain definite information on the ability of candidate vaccines to induce protective immunity in humans". This different attitude reflects the fact that public health needs may differ from country to country, resulting in different recommendations in different parts of the world. However, there should be no scientific or ethical shortcut in planning an efficacy trial in any country.

Vaccine testing in developing countries

The prospect of launching efficacy trials in developing countries is presently meeting many difficulties, some technical and others ethical.

One technical problem is the fact that it has not been possible so far, in spite of repeated attempts, to develop a multivalent, "universal" HIV-1 vaccine based on conserved antigenic determinants. It is therefore necessary that specific vaccines be developed to match the circulating HIV-1 isolates in the developing countries.

Another technical problem stems from the need to strengthen local infrastructures in these countries, i.e. hospitals and laboratories, and to train local personnel. It is impossible to plan an efficacy trial that would involve from several hundreds to a few thousand volunteers without appropriate logistical and professional support in the field.

Among the many ethical problems that may arise, that of the modification of sexual behaviour that might possibly be induced by a large-scale vaccine trial is of serious concern. Such a trial would be dangerous if the attitude of the volunteers towards prevention was significantly altered as a consequence of their enrollment in it. Educating the people is, therefore, one of the most important prerequisites to a large-scale trial. It is noteworthy that even some elites in developing countries confuse the use of vaccines in prevention and their use in immunotherapeutic interventions. Unreasonable expectancy of protection from highly exposed and poorly educated people is much to be feared. This could be overcome only by repeated counselling and education.

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Aids in a different light

by Marie-Thérèse Bocabeille

THE POSSIBILITIES OF TRADITIONAL MEDICINE

Modern medicine so far has nothing effective to offer to Aids patients, in spite of the massive technological, chemical, surgical and radiotherapeutic resources devoted to Aids research in recent years. At the same time, the principles of traditional forms of medicine have been ignored. And yet, while they make no claim to halt the epidemic, they can make a big contribution to the strengthening of the immune defences and to the prevention of opportunistic diseases.

According to Dr. Christian Tal Schaller[1], who has twenty-five years' experience as a practitioner of alternative medicine, there are two schools of thought. On the one hand there are those who believe that the virus is the sole or major cause of the immunodeficiency. On the other, there are practitioners who are in touch with natural medicine movements all over the world and who subscribe to the dictum of the great French physiologist Claude Bernard (1813-1878): "The virus is nothing, the terrain is everything".

The "terrain" comprises all the different parts of an individual that it would be too simple to limit to his or her physical body. In addition to the physical organs, which are themselves very complex, there are all kinds of complex forces and states of mind that play an essential role in any process of improvement.

Modern medicine, sophisticated though it may be, is almost exclusively concerned with physical illnesses which it regards as originating from outside—people are supposed to "catch" a disease—without the individual's having any particular responsibility for what happens to him or her.

It must be accepted, however, that this approach provides no explanation as to why, for example, not everyone who is HIV-positive develops Aids nor why some even return to being HIV-negative.

As things stand at present, the possibilities offered by traditional medicine cannot be ignored, much less snubbed or made fun of.

'HOW I BECAME HIV-NEGATIVE AGAIN'

Niro Markoff Asistent, a Belgian therapist living in the United States, was diagnosed HIV-positive in 1985. Some time went by before she accepted her condition and recognized her own responsibility for her rundown state. When her doctor admitted there was nothing he could do for her, she decided to take her life in her own hands. Using with the utmost care the 500-day reprieve she had been given, she embarked on a voyage of physical and mental self-discovery.

A year later, Niro Asistent became HIV-negative again. Inspired by her experience, she created a foundation, the Self Healing Aids-Related Experiment (S.H.A.R.E.), to which she now devotes her life. "I believe," she writes, "that Aids is the most powerful transformational tool that has ever been available to us on a mass level. It has detonated a bomb under the surface of society that is forcing us to reevaluate the entire foundation of life as we know it. It is shaking the medical community and its related industries, it is affecting the educational and judicial systems. It is forcing us to question our values, our morals and our identities.[2]

THE VIRUS, A NECESSARY BUT NOT A SUFFICIENT CONDITION

HIV alone is not enough to cause Aids, because not all HIV-positive people develop Aids. There are thus grounds for thinking that other factors, or co-factors, are involved.

A California research centre[3] has drawn up a list of co-factors which may contribute to the acceleration or slowdown of immunodeficiency. They include psychological factors such as stress, depression, pain and the conviction that one is dying. Others, such as nutrition, oxygenation, sleep or physical exercise, are related to life-style. Therapeutic treatment, relations with one's doctor, and the capacity to cure oneself are also involved.

'HIV IS NO DEATH SENTENCE'

Mark Griffiths[4], a British musician, was diagnosed HIV-positive in 1986. He immediately began improving his quality of life by learning to know himself and live at peace with himself. He sought to disintoxicate himself physically and mentally by natural methods, and gradually recreated the bond between his inner self and his body. By following his own evolution, without any miracle cure but with great confidence in his own intuition, he became his own doctor.

In the summer of 1990, Mark Griffiths came across a text entitled *Is the Aids virus science fiction?* by Peter Duesberg of the University of California, Berkeley, which echoed many of the doubts and questions that arose when he learned he was HIV-positive, especially about the opportunistic diseases that he was told he would encounter. In September of that year, he published a booklet entitled *Healing into freedom: Aids, the apprenticeship,* in which he reported the experiences of those he calls the long-term survivors.

Intent on encouraging the publication of alternative research which would be both scientific and rigorous, he has become the champion of a new way of looking at the question and a new debate. He believes that to be HIV-positive should not be regarded as a death sentence. He is fighting for patients to be free to choose their treatment. He has created a network which collects the testimony of people who have returned to good health after a serious illness, of scientists who support the theses of natural regeneration and therapists who teach self-healing. The Aids acronym for him has been reshuffled to read "Acquired Interior Development Source". ■

1 Dr. Christian Tal Schaller, 32 av. Petit Senn, 1225 Chêne-Bourg, Geneva (Switzerland).
2. Niro Markoff Asistent, *Why I survive Aids*, Simon and Schuster/Fireside, New York, 1991, pp. 243-244.
3. LIFE (Learning Immune Function Enhancement), Aids Response programme, Center for Social Services, 3916 Normal Street, San Diego CA 92163, U.S.A.
4. Mark Griffiths, 87, chemin du Vélard, F-01710, Thoiry

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is a staff member of UNESCO's Promotion and Sales Division.

CONTINUED FROM PAGE 34

Another problem is that of the subsequent availability of the vaccine. Testing a vaccine in a developing country which would not be able to afford it later because of excessive pricing would be difficult to accept. It should also be made clear that the concept of developing a safe, sophisticated, but expensive vaccine for the industrialized countries and an unsafe, unsophisticated but cheap vaccine for the developing countries is ethically unacceptable.

Making HIV-1 vaccines available to developing countries

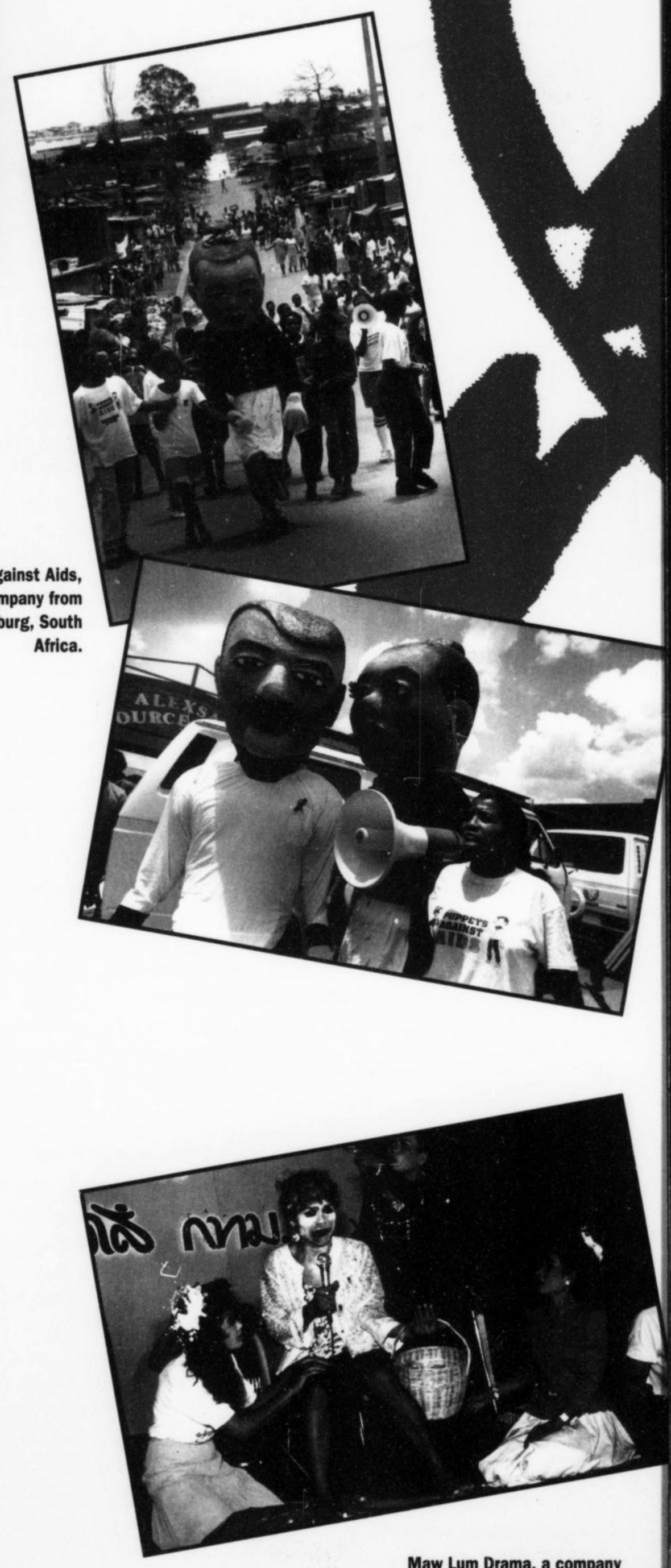
It is obvious that the success of vaccination against HIV will depend on the characteristics of the future HIV-1 vaccines—on their safety, efficacy, duration of protection, stability, the number of doses required for full immunization, and last but not least, their cost. There has been very strong political pressure to make HIV-1 vaccines available to developing countries at a marginal cost. Even though we are still years away from marketing such vaccines, it is appropriate for the public health community to set the stage for an effective global Aids-prevention effort. One should realize, however, that the cost of developing a new vaccine has reached fantastic heights due to the enforcement of stricter regulations, tighter quality controls, higher safety standards, and to the very high cost of clinical studies, not to mention the cost of research itself. Aids-vaccine research for the past ten years in the United States and Europe has already cost several billion dollars.

The financial returns to be expected by the vaccine manufacturers will obviously be low, vaccines being quite different in this respect from pharmaceutical drugs. How could a vaccine be made available to developing countries?

One possibility would be to sell the vaccine to these countries for a low price and for a compensatory high price on the Western world market. But how low is low? It has been estimated that an HIV-1 vaccine would be administered yearly to about 300,000 persons worldwide, which could involve 1,200,000,000 doses, not counting subsequent booster doses. Manufacturing, controlling and distributing such an enormous number of vaccine doses would cost several billions of dollars.

It is clear that we will have to invent a mechanism, such as direct payment from an international agency to the manufacturing companies, to provide the companies with sufficient reward while at the same time supplying the Aids vaccine to the developing world at a rock bottom price. This is basically what UNICEF (the United Nations Children's Fund) and the Pan-American Health Organization (PAHO) are trying to do for classical vaccines. But the chances of success of such an operation will depend strictly on the goodwill of the industrialized nations. ■

Artists against



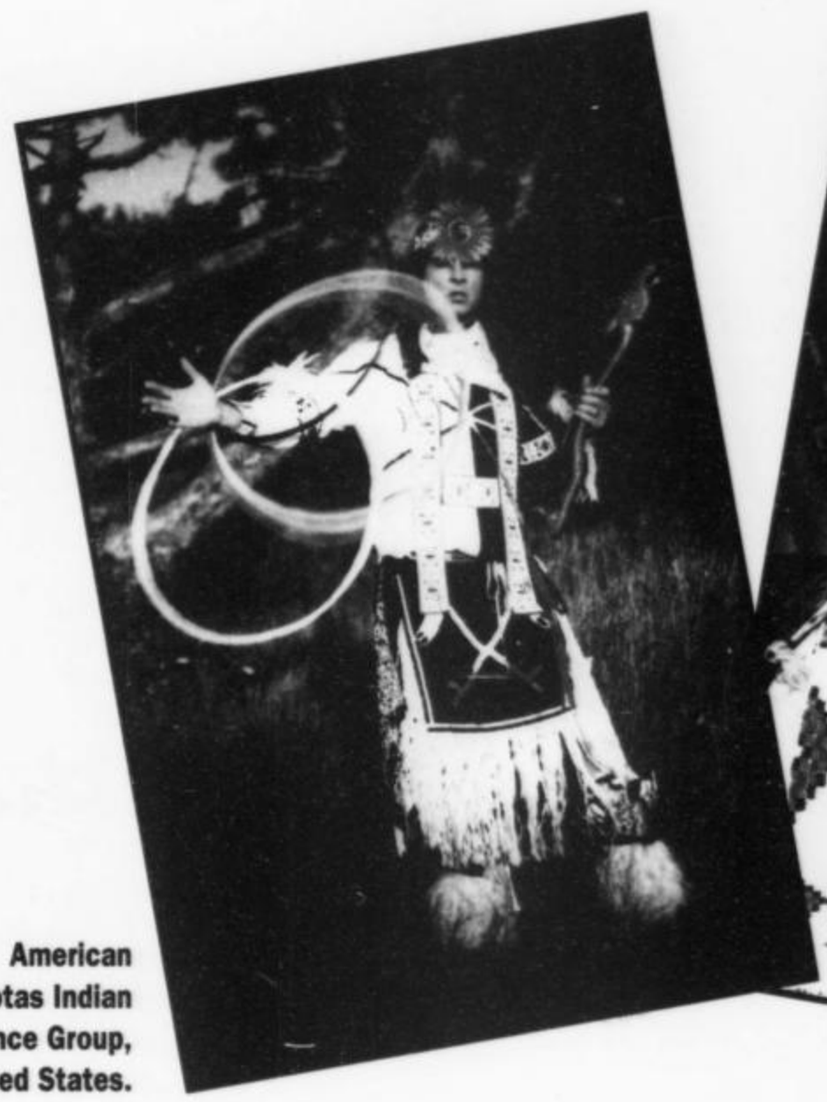
Puppets Against Aids, a company from Johannesburg, South Africa.

Maw Lum Drama, a company from Thailand that takes part in a rural Aids-prevention project.

Aids: getting the message across

Photos and text from a report by Erika Lüdecke

Teatro Sociedad Anonima, a street-theatre company from Chile.

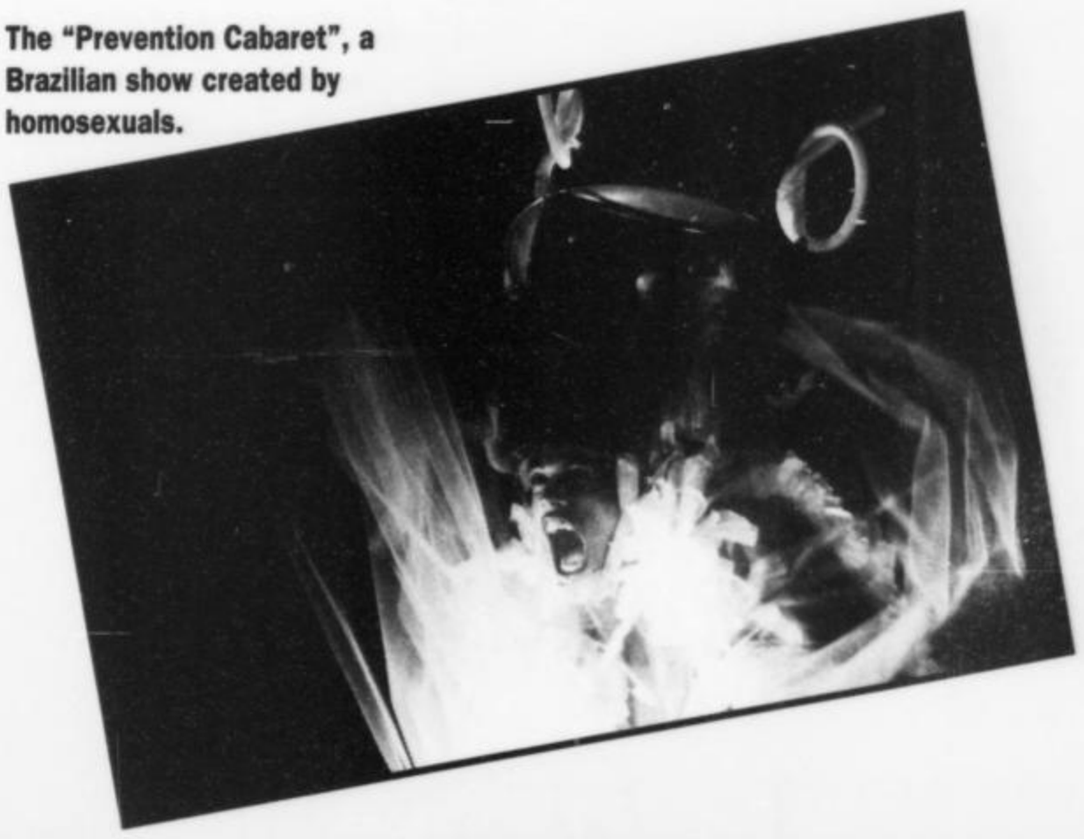


American Dakotas Indian Dance Group, United States.

On the fringe of the 9th International Aids Conference, held in Berlin in 1993, Deutsche AIDS Hilfe, an umbrella group for associations fighting Aids in Germany, organized an "Aids Culture—Cultural Aids" Festival in co-operation with the German National Commission for UNESCO. For a week artists from all over the world (painters, sculptors, rockers, rappers, puppeteers and actors) used their talents to inform the public and promote Aids prevention. Photos show street actors and dancers who were among the most talented and original performers at the Festival.

Mwanza Masauto Mobile Theater (Triple MT), itinerant musicians and actors from Zambia.

The "Prevention Cabaret", a Brazilian show created by homosexuals.



FACT FILE

A joint UN programme against Aids

To strengthen efforts to fight the spread of Aids, six United Nations Agencies have agreed to co-operate in a joint United Nations programme on HIV-Aids. The agencies are the World Health Organization (WHO), the UN Development Programme (UNDP), the World Bank, the UN Population Fund (UNFPA), the UN Children's Fund (UNICEF) and UNESCO. The programme, which will combine existing efforts and will be administered by WHO, will come into operation in January 1996.

The specialized agencies concerned have already been involved in combatting the Aids pandemic for almost a decade. Here is a brief account of their activities:

World Health Organization: its Global Programme on Aids helps individual countries to take short-term measures in response to the crisis and to establish long-term national prevention programmes. Today national Aids programmes have been established in virtually every country of the world, most of them with WHO advice and guided by WHO's Global Aids Strategy. WHO also provides financial resources and equipment, carries out epidemiological monitoring, supports the development of vaccines and research into new approaches to Aids prevention and care.
WHO, 20 Avenue Appia, 1211 Geneva 27, Switzerland.
Telex: 41 54 16; Telephone: (41 22) 791 46 52; Fax: (41 22) 791 03 17.

United Nations Development Programme: UNDP's particular responsibility is to provide support in tackling the social and economic repercussions of the epidemic and minimizing its impact on human development. Its mandate is to increase awareness, expand the capacity of communities to respond, assist prevention, care, support and treatment programmes for women and help to develop multi-sectoral HIV strategies.
UNDP, One United Nations Plaza, New York, N.Y. 10017, U.S.A.
Telex: 125 980, 236 286, 422 862;
Telephone: (1 212) 906 5000;
Fax: (1 212) 826 2057.

World Bank: the largest source of finance for Aids prevention programmes. Since 1986 cumulative lending for Aids prevention and control in some 40 countries amounts to over $500 million.
World Bank, 1818 H Street NW, Washington DC 20433, U.S.A. Telex: RCA 248423, ITT 440098, WUI 64145; Telephone: (1 202) 477 1234; Fax: (1 202) 477 6391.

United Nations Population Fund: in 1992, UNFPA supported Aids prevention and control activities in 84 countries. It provides information and counselling on Aids prevention, and distributes condoms as part of maternal and child health and family planning programmes.
UNFPA, 220 East 42nd Street, New York, N.Y. 10017, U.S.A.
Telex: 7607883; Telephone: (1 212) 297 50 11; Fax: (1 212) 370 0201.

United Nations Children's Fund: UNICEF distributes information through school curricula and health education programmes, notably to women and children at risk. It also provides orientation and training for those likely to come into contact with Aids patients and their relatives, and works to expand primary health care services, with particular attention to the sterilization of medical equipment. It is also examining ways of caring for the growing number of Aids orphans.
UNICEF, UNICEF House, 3, United Nations Plaza, New York, N.Y. 10017, U.S.A.
Telex: 7607848, 175989;
Telephone: (1 212) 326 7000;
Fax: (1 212) 888 7465.

United Nations Educational, Scientific and Cultural Organization: UNESCO supports an interdisciplinary approach to Aids-related problems, associating knowledge of their socio-cultural, ethnic and scientific aspects with a mastery of communication techniques. UNESCO/WHO pilot projects in school-based Aids education adapted to different socio-cultural contexts have been undertaken in different world regions. An Aids School Education Resource Centre (ASERC) for the gathering, exchange and diffusion of educative materials for young people of school age has been set up at UNESCO Headquarters. It contains over 2,500 publications and 150 video films from all the world regions. Bibliographies and extracts of didactic materials are regularly published.
UNESCO, 7 Place de Fontenoy, 75352 Paris 07 SP, France.
Telex: 204461 Paris, 270602 Paris;
Telephone: (33 1) 45 68 09 29;
Fax: (33 1) 47 83 27 10.

FONDATION MONDIALE RECHERCHE ET PREVENTION SIDA

The World Foundation for Aids Research and Prevention was established in January 1993 by the Director-General of UNESCO, Mr. Federico Mayor, and Professor Luc Montagnier, who discovered the human immunodeficiency virus. The goal of the Foundation, whose president is Prof. Montagnier, is to mobilize all kinds of private initiatives, to create new partnerships and find new forms of co-operation, especially in research and prevention, in order to support and add to action taken by public authorities in the fight against Aids.

Stimulus for research

One of the Foundation's priorities is to build an international network of pilot research centres in order to stimulate co-operation between researchers. The first three centres are being established

Documentation

The documents produced by UNESCO are available free of charge (except when stated otherwise) from the Section for Preventive Education, UNESCO (for address see box at left).

- *School Health Education to Prevent AIDS and STD: A Resource Package for Curriculum Planners*, Paris, UNESCO/WHO, 1994, 3 volumes.
  Vol. I: Handbook for Curriculum Planners, 88 pp.
  Vol. II: Students' Activities, 79 pp.
  Vol. III: Teachers' Guide, 117 pp.
- *Selection of Extracts from Teachers' Guides*, No. 1, Paris, UNESCO/WHO, 1992, 146 pp.
- *School Health Education to Prevent AIDS and Sexually Transmitted Diseases* (WHO AIDS Series 10), Geneva, WHO/UNESCO, 1992, 79 pp. Available at WHO Global Programme on AIDS, 1211 Geneva 27, Switzerland.
- *Education for AIDS Prevention. Bibliography.* Paris, UNESCO, 1994, 180 pp. + *Supplements.*
- *Annotated list of videos gathered in the ASERC*, Paris, UNESCO, 1994, 26 pp. (Multilingual).
- *List of posters gathered in the ASERC*, Paris, UNESCO, 1994, 25 pp.
- Posters issued on the occasion of World AIDS Day.
- AIDS—Facts and Hopes (Ed. Prof. Luc Montagnier), Paris, Pasteur Institute, 1988, 64 pp.
- *The Impact of HIV/AIDS on Education—A Review of Literature and Experience.* Sheldon Shaeffer, Paris, UNESCO, 1994, 45 pp.
- UNESCO Asian Planning Seminar on AIDS and Education within the School System, New Delhi, 10-14 January 1994. Final Report, 55 pp.
- WHO/UNESCO Pilot Projects on School-based AIDS Education: A Summary. Geneva, WHO, 1994, 55 pp.
- Bibliography: *Education for the Prevention of AIDS* (Bulletin of the International Bureau of Education No.262). Geneva, IBE, 1992, 48 pp.
- **VIDEO**: *AIDS, It's Time for Schools to Act!* (Dir. Jean-Louis Gros), Paris, UNESCO, 20 mn on VHS/PAL and VHS/NTSC.
- **CD-ROM:** *A Bibliography on Education for AIDS Prevention* is available from the Documentation and Information Service, Education Sector, UNESCO, 7, Place de Fontenoy, 75352 Paris 07 SP, France. Tel: (33-1)45 68 10 29. Fax: (33-1)45 67 45 83.

A World Foundation for Aids Research and Prevention

in Paris, Abidjan (Côte d'Ivoire) and in California (U.S.A.). A fourth is planned for Asia.

The purpose of the pilot project at the Saint-Joseph Hospital in Paris is to create rapidly a centre that combines clinical examinations and laboratory testing in order to ensure regular follow-up of a cohort of asymptomatic HIV-positive patients receiving associated treatment. The centre is due to open at the end of 1995. Following a media campaign called Sidaction, carried out in France in April 1994 under the auspices of Luc Montagnier with the major anti-Aids organizations, the Foundation received 25 million French francs, which will enable the centre to meet running costs for two years.

The Abidjan Centre will be concerned with applied research and training and will also work with Côte d'Ivoire's National Centre for Blood Transfusions (CNTS) on the follow-up of HIV-infected patients. The Ivorian government has already earmarked a site for the centre, which will receive support from WHO and the joint UN programme on HIV/Aids. The centre will reach out to Africa as a whole, opening branches in interested countries with the help of doctors and scientists from industrialized countries who wish to take part in this international effort. The Foundation has already sent a technician to the CNTS and fitted out a laboratory to launch a research project in connection with the latter.

Negotiations have begun with institutions in Los Angeles and Pasadena (California, U.S.A.) to set up a research centre that will work with the Paris and Abidjan centres.

A window of hope

The Foundation is encouraging the creation of scientific committees on Aids to complement the work of these centres. During a meeting of African scientists held in Paris under the aegis of the Foundation and UNESCO prior to the Paris Summit on Aids of 1 December 1994, it was decided to establish an African scientific committee and solidarity fund.

The Foundation will promote the opening of new forms of interdisciplinary co-operation in order to identify any approach that offers a ray of hope. A first meeting with this in view was held in Venice in October 1994 to establish a dialogue between Aids experts and researchers in other fields: physicists, mathematicians and chemists. Other meetings will be held periodically to promote similar forms of co-operation.

Another of the Foundation's priorities is to strengthen prevention by working with UNESCO to find policies that are most suited to each country's socio-cultural context. Two pilot projects are currently being carried out, one in Uganda and the other in Ethiopia, in co-operation with the universities of Makerere in Kampala, Addis Ababa in Ethiopia and Johns Hopkins in the United States. The projects are primarily aimed at children and adolescents from 5 to 15, the age group least affected by Aids and through whom a "window of hope" may open.

World Foundation for Aids Research and Prevention, International Secretariat, 1, rue Miollis, 75732 Paris Cedex 15. Tel: (33-1) 4568-3841; Fax: (33-1) 4273-3745.

Glossary

Aetiology: study of the causes of diseases.
Aids: "Acquired Immune Deficiency Syndrome", a serious disease caused by the virus, HIV, which destroys the immune defences of the body, which is then subject to serious "opportunistic" infections and certain cancers.
Antibodies: substance secreted by B lymphocytes in response to aggression on the body by substances known as antigens. Each antibody is specific for a particular antigen. In the case of HIV, the antibodies secreted are not all neutralizing. In spite of their presence the virus can thus continue its destructive effects.
Condom: a rubber sheath which fits over the penis when a man is sexually excited and the penis is hard. It can be used to protect against pregnancy and sexually transmitted diseases.
DNA: deoxyribonucleic acid, a large molecule that carries genetic information and forms the basis for heredity.
ELISA: abbreviation for Enzyme Linked Immuno-Sorbent Assay. This is the serological (blood) test most widely used to detect whether the body has reacted to the presence of HIV.
Epidemic: an occurrence of disease that is temporarily of high prevalence. The rise and decline of an epidemic are related to such factors as the gravity of the disease, the mode of transmission of the infective agent, environmental conditions, length of the incubation period and the existence of asymptomatic carriers. Methods of combatting an epidemic must be adapted to these factors. Infection by HIV is transmissible but not highly contagious. The incubation period is long.
Epidemiology: study of the causes of appearance, disappearance or dissemination of diseases.
HIV: the human immunodeficiency virus, which causes Aids. There are two main types of the virus: HIV-1, which is responsible for the worldwide pandemic of Aids, and HIV-2, which can also cause Aids and occurs mainly in West Africa.
Immune system: all the mechanisms that act to defend the body against external agents (bacteria, viruses, parasites) or toxic substances described as antigens. The immune system can distinguish between aggressors belonging to the body itself and external aggressors. It can recognize those which are aggressive, those against which it already has defences (natural or acquired). It knows how to organize an appropriate attack against the antigens. To do this it uses antibodies (or immunoglobulins) vehicled by the circulatory flow (the "humoral" response); specific cells called B and T lymphocytes, which are capable of recognizing the antigens, organizing the response and producing new antibodies (the cellular response); macrophage cells which clean up after the lymphocytes and antibodies. The T4 lymphocytes, which co-ordinate immune defences, are strategic cells that constitute the target of HIV, which paralyses and destroys them.
Immunosuppression: reduction in the body's immune defence mechanisms.
Incubation: interval between entry of the micro-organism into the body and the date of the onset of the first symptoms of the disease. In the case of Aids, the incubation period is very variable; it may range from several weeks to several months or even several years.
Opportunistic infection: infection induced by a micro-organism that is usually well tolerated by the body and only becomes pathogenic when the body's defences are depressed. The most serious manifestations of Aids are caused by opportunistic infections.
Prevention: individual or collective measures aimed at limiting or avoiding risk of accident or disease, reducing its consequences and treating its effects. In health care, prevention includes social as well as purely medical measures.
Retrovirus: virus in which the genetic material is composed of RNA, but which is converted in the cell to DNA by a special enzyme, reverse transcriptase. HIV is a retrovirus.
Seropositive or HIV-positive: a person with a positive screening test for antibodies to HIV. This person has been in contact with HIV and should be considered to be potentially contagious by his/her blood and by sexual relations. When the test does not detect antibodies, the person is said to be "seronegative" or "HIV-negative".
RNA: Ribonucleic acid. It transmits the genetic information carried by DNA within the cell. All the genetic material of the human immunodeficiency virus consists of RNA molecules.
STD: sexually transmitted diseases, i.e. diseases that can be contracted by means of sexual relations. Aids is essentially a sexually transmitted disease.
Syndrome: a combination of symptoms and signs that may constitute a common denominator for certain diseases. The immunodeficiency syndrome constitutes the essential feature of Aids, but it can also occur in other contexts, such as congenital diseases or tumours (leukaemia) or it may be drug-induced (immunosuppressant treatment in transplant patients).
Virus: infectious agents responsible for numerous diseases in all living beings. They are extremely small particles (which can only be seen under the electron microscope) and, unlike bacteria, can only survive and multiply within a living cell at the expense of this cell.
White blood cells: blood cells responsible for the defence of the body against foreign agents.

Sources: *Aids—Facts and Hopes*, Pasteur Institute, 1993; *Action for Youth. Aids training manual.* League of Red Cross and Red Crescent Societies/World Organization of the Scout Movement; *Le sida, réponses aux questions du personnel de santé sur l'infection par le VIH*, AP-HP & ARCAT-SIDA, 1993.

Susah, pearl of the Tunisian Sahel

by Moncef Ghachem

Jewel of the Sahel on Tunisia's east coast, witness to 3,000 years of Mediterranean history, the Medina of Susah is a treasure-trove of past and present.

Famed for its craftsmanship, its festivities and its hospitality, Susah is the capital of the Sahel, the olive-growing region bordering the Mediterranean in eastern Tunisia. During the hot Tunisian summer its streets are filled with singing and dancing. Visitors flock from other parts of Tunisia and from abroad to enjoy the rhythms, colours and games of the *Aoussou* (August) festival, when colourful costumes and parades evoke episodes in the long history of this cosmopolitan city whose heritage includes Christian catacombs, Roman mosaics, the vestiges of a Byzantine citadel and the ramparts of the Arab Medina (old town).

A thousand years before the Christian era, Susah was already a trading centre and a stopping-off place on the route from Tyr to Spain. The Phoenicians, who called it Hadrumet, established an important trading station there two centuries before the foundation of Carthage. During his campaign against Scipio at the end of the Second Punic War, Hannibal sailed to Hadrumet from Italy, used its port and pitched his camp there. Under the Roman Empire, rich colonists who owed their wealth to the agricultural produce of the fertile back country poured into Susah. In the seventh century battles between Arabs and Byzantines reduced the city to ashes. Then it rose from its ruins and was given its present name. But two centuries went by before it regained some importance under the rule of the Aghlabids, who improved its port and erected its main monuments. In the twelfth century the

Left, Susah's Great Mosque, built in 851. Right, massive pillars and arches in the prayer hall.

Normans of Sicily used it as a base, and in the sixteenth the Spanish attacked and tried to occupy it. Two centuries later it was bombarded by the French. In the Second World War the Germans used its port, which was badly damaged by the Allies in the winter of 1942-1943. Following the war, the modern city was built and the Medina carefully restored.

THE GREAT MOSQUE

Its souks teeming with life, the Medina of Susah is one of the most remarkable old quarters in Tunisia. It gives onto the port, where freighters laden with salt and oil wait to weigh anchor. There are several gates in the ramparts that girdle it, but the main access is in the northeast, near Farhat Hached Square, where Allied bombardments in 1943 opened a wide breach.

At the entry to the Medina on the right flank of a broad esplanade paved with rough stones is the Great Mosque, which dates from the ninth century. Careful restoration work has recreated its original appearance. The main courtyard is surrounded by three vaulted galleries whose squat pillars and tall arches are austere and functional. The more decorative southern gallery (modified in 1675 and restored in 1965) leads to the prayer hall, whose thirteen naves, each with six bays, are similar in style although they date from different periods. The fourth bay from the present *mihrab* (the prayer niche in the wall facing Mecca), is covered by a dome resting on small shell-shaped arches. Its lower sections are adorned with highly stylized floral patterns, sculpted squares framing rosettes and a fine inscription in Kufic script. The ornate *minbar* (pulpit), like a piece of wooden lacework, contrasts sharply with the sober architecture of the Mosque.

A FORT MANNED BY PIOUS WARRIORS

On leaving the Great Mosque, the visitor can wander through the narrow streets of the Medina lined with chalk-white houses, climb stairways and and plunge into mysterious passageways before coming to the austerely beautiful Ribat, a fortified monastery dating from the end of the eighth century. The Ribat was one of the coastal forts that, from Alexandria to Ceuta, formed a defensive line for Islam against the fleets of Byzantium. Mooring rings attached to the walls indicate that the latter were once battered by the waves. The Ribat takes its name from the *murabitin*, pious warriors who were stationed there to defend the city from enemy incursions.

The Ribat too has been recently restored and now looks as it must have done centuries ago. Ancient columns and capitals flank the entrance, which was protected by a portcullis. Openings in the roof were used as points from which to harass attackers. The low, dark guard-rooms used by the *murabitin* stand on each side of the entrance hall, the roof of which is supported by intersecting arches. Around the central courtyard are rooms that were used by the devout soldiers for their ablutions, and galleries concealing windowless cells. On the first floor the cells only occupy three sides of the quadrangle: the south wing contains a prayer hall divided by heavy cruciform pillars into two bays of unequal size. The *qibla*, the inner wall facing Mecca, is pierced with loopholes, reflecting the building's combined religious and military character. From the top of the *nador*, which is both a watch-tower and a minaret, there is a wonderful panoramic view over Susah and the surrounding countryside.

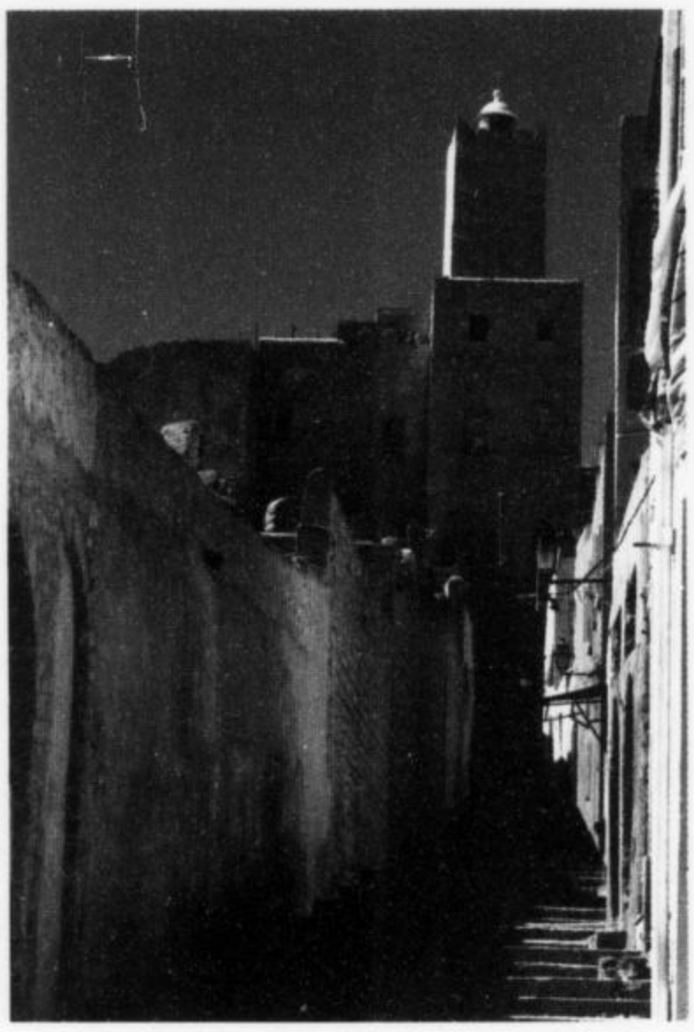
MOSAIC MASTERPIECES

After leaving the Medina by the western Gate (*Bab el-Gharbi*), a stroll along the

Left, the *minbar* or pulpit of finely carved wood.

Above, the Ribat, a late 8th century fortified monastery. It is protected by a square perimeter wall, each side of which is nearly 30 metres long. At each corner and halfway along each wall are semi-cylindrical towers.

A street in the Medina climbing to the Khalef el Fata tower at the southeastern corner of Susah's ramparts. The tower is thought to have been built in the 9th century and modeled on the great Roman lighthouse at Leptis Magna on the Tripolitanian coast of Libya.



ramparts takes us to the Kasbah, which is dominated by the imposing Khalef tower, built in 859. Fully integrated into the urban fabric, the Kasbah houses the city museum, which is noted for its collection of Roman mosaics, discovered in Susah and in the surrounding area. Masterpieces by the finest mosaic makers line the walls of the patio. The opulent lifestyle of the Romans who lived in the Tunisian Sahel in the second and third centuries seems to have provided the craftsmen with their main themes. As well as remarkable portraits of the sea god, a triumphantly dancing Bacchus, Apollo and the muses, Venus at her toilet and Orpheus calming wild animals, there are also many scenes from daily life, of hunting, fishing and horse-racing, and depictions of fish, fruit and birds including fan-tailed peacocks.

The Kasbah museum also contains Punic, Roman and Byzantine funerary objects and remarkable stelae found in the catacombs around Susah and assembled here after galleries collapsed as a result of water infiltration. Used in the second and fifth centuries and discovered at the end of the last century, the catacombs contain 15,000 pagan and Christian tombs. They are over five kilometres long and are lined with niches dug in the walls and closed off by tiles or marble slabs.

It would be wrong to leave Susah without taking the magnificent corniche that winds its way above the beach at Boujaâfar. The sea stretches away into the distance, its sounds seeming to offer an eternal promise of happy and prosperous voyages. Like many other Tunisian coastal towns, Susah encourages tourism. The tourist area stretches northwards, beyond the yacht harbour at El-Kantawi, built beside a holiday village whose houses follow the curve of the bay. These are elegant structures that do not detract from Susah's cultural heritage. On the contrary they confirm that Susah is still what it has always been, a city of new beginnings. ■

MONCEF GHACHEM
is a Tunisian poet and journalist. His latest work, *L'épervier—nouvelles de Mahdia* ("The Sparrow-Hawk—Stories from al-Mahdiyah", SPM, Paris, 1994) received a special mention from the jury of the Albert Camus prize, 1994.

CHRONOLOGY

9th century B.C.: Hadrumet is founded by Phoenician sailors.
6th century B.C.: Hadrumet comes under Carthaginian rule and becomes involved in the Punic Wars.
310 B.C.: It is sacked by the Syracusan Agathocles.
202 B.C.: Hannibal sets up his camp at Hadrumet before being defeated by Scipio.
146 B.C.: Wisely taking sides with the Romans during the Third Punic War, Hadrumet is granted the status of a free city and named "Hadrumetum".
46 B.C.: Caesar annexes the Numidian kingdom and rescinds Hadrumetum's privileges.
A.D. 284-305: The city becomes the capital of the new province of Byzacena.
429: Vandal invasion.
533: The city is reconquered by Justinian, emperor of the eastern Roman empire, and renamed Justinianopolis.
647: The city is conquered by the Arabs and destroyed.
End of the 7th century: It rises from the ashes and is called Susah.
800: Beginning of the Aghlabid dynasty (Sunnite Muslims).
827: Susah is used as the port of embarkation for the Muslim forces attacking Sicily.
844: Construction of the first Kasbah.
851: Construction of the Great Mosque.
909: The Fatimids (Shi'ites) come to power.
1053: After the Zirids break with the Fatimid Suzerain in Cairo and Ifriqiya returns to Sunnite orthodoxy, Susah rebels and its harbour is burned.
12th century: The city is occupied by the Normans and then falls under the domination of the Almohad Moroccan Berber dynasty.
13th century: The Hafsids come to power.
14th century: Decline of the Hafsid state, which collapses in the 16th century.
1574: The Turks dominate the whole of Tunisia.
17th century: Susah becomes a port used by big Ottoman pirate ships.
1705: The Husaynids come to power.
1770: Susah is bombarded by the French.
1784-86: Venitian bombardments cause major destruction.
1864: The Sahel rises against Ottoman rule.
1942-1943: Susah is seriously damaged during allied operations in the Tunisian campaign.
1988: The Medina of Susah is placed on UNESCO's World Heritage List.

GREENWATCH

Turkey, land of diversity

by France Bequette

Right, a "spontaneous" settlement in Ankara.

A peninsula 1,565 long and 550 km wide, Turkey has an extraordinary diversity of natural habitats and a correspondingly rich animal and plant life. It shares borders with Syria, the former Soviet Union, Iran, Iraq, Bulgaria and Greece, and its 8,372 kilometres of coastline are washed by the Mediterranean, the Aegean, the Sea of Marmara and the Black Sea. All kinds of terrain are found in Turkey: mountains, especially in central and eastern Anatolia, with an average altitude of 1,250 metres, plateaux, fertile plains and extensive beaches. The climate is equally varied. The Mediterranean seaboard has dry, warm summers and rainy winters, while central Anatolia has a raw, dry continental climate.

Turkey's population increased from 13.7 million in 1927 to 37.3 million in 1991 and may reach 70 million by the year 2000. As part of a massive and continuing east-west migratory trend, rural populations are moving into the cities, especially those on the coast. Today 59 per cent of Turks live in cities, particularly Ankara, Istanbul and Izmir, and this is giving rise to serious environmental problems. Istanbul, straddling the Bosphorus with one foot in Europe and one in Asia, is not even sure of the number of its inhabitants. Figures of 10, 13 or 15 million have been advanced. New arrivals, mostly from Anatolia, build dwellings wherever they can, with little regard for hygiene or the dangers of flooding. From time to time bulldozers flatten these "spontaneous" settlements, and their owners are relocated.

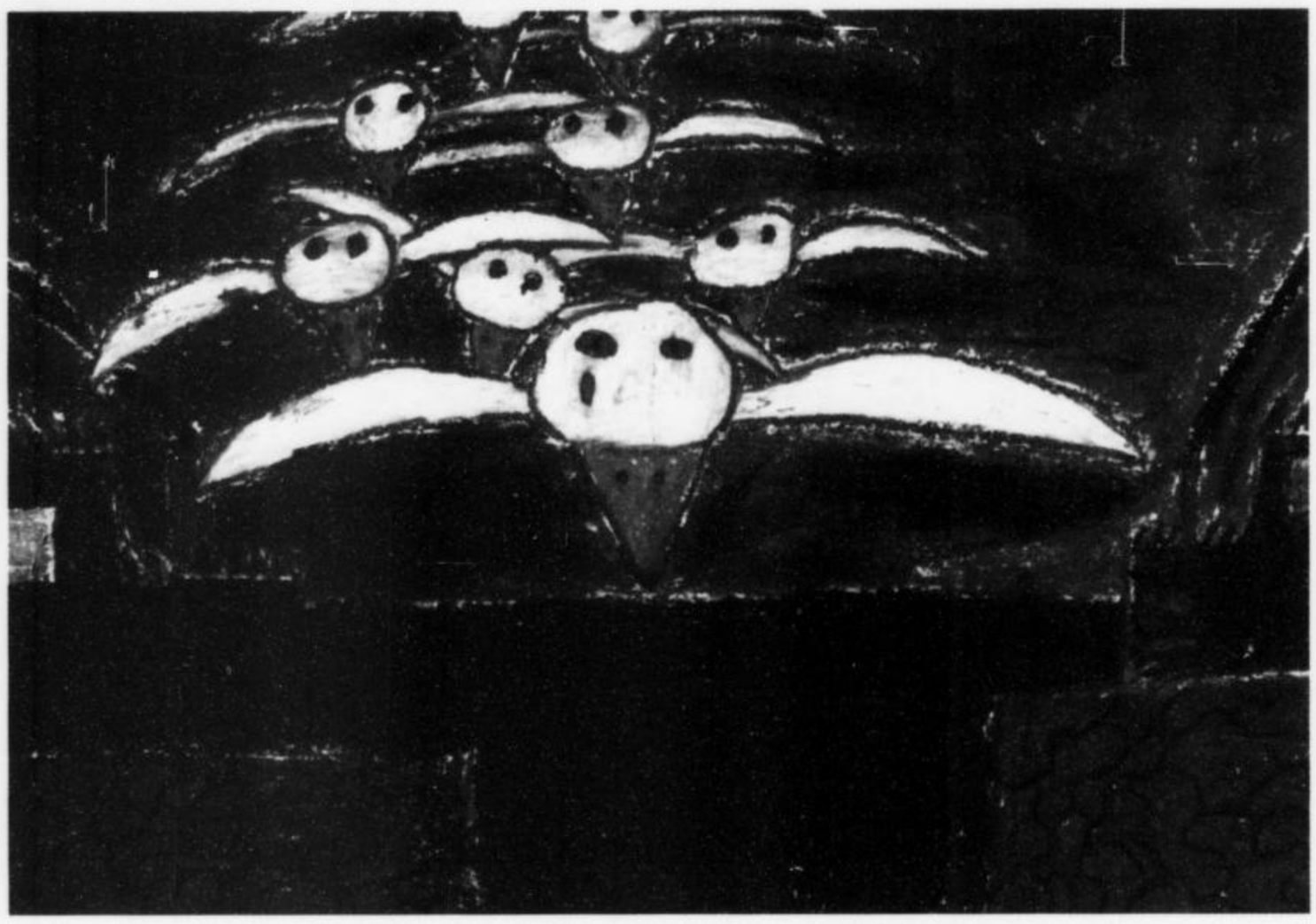
No such instant "solution" exists for air pollution, which sometimes reaches alarming proportions. Last February thick fog covered Istanbul, and the sulphur dioxide level rose above the alarm barrier of 400 micrograms per cubic metre in seven of the city's districts. In some it even reached 680 micrograms.

In a recent interview, Ms Nesrin Algan, head of the department of international relations at the Ministry of the Environment in Ankara, talked about another problem facing Turkey. "Erosion is ten to twelve times worse than the African average," she said, "and eighteen times worse than the European. The culprits are deforestation, fires and overgrazing in our mountainous areas." More than a quarter of Turkey is covered by woodland, mostly in the coastal areas. Although nine million hectares are in satisfactory condition, eleven million have been damaged by rampant urbanization, by tourism, agriculture and pests.

FRANCE BEQUETTE is a Franco-American journalist specializing in environmental questions.

MIGRATORY BIRDS AND MARINE TURTLES

Nevertheless, Turkey continues to be a veritable botanical treasure-trove. Some 12,000 different plant species have been



This drawing by 9-year-old Omer Erol is entitled "You are right to cry, pretty bird!" It won an award in a drawing competition organized by the Turkish Society for the Protection of Nature (DHKD) on the theme of the threats to migratory birds.

recorded, a number almost as high as that for the whole of Europe, and there are about 80,000 animal species, more than in Europe. Twice a year the country is crossed by masses of migratory birds. The government has launched a number of programmes to protect the birds' stopover sites, especially in wetlands. One site, the Manyas Reserve, has been designated a European diploma site by the Council of Europe: three million birds belonging to 250 different species land there each year. An association comprising governors, mayors and local village dignitaries is currently being set up to ensure the Reserve is protected. Leaders of local industry will be invited to join in order to involve them in environmental protection and the struggle against pollution.

Another important ornithological site, the Menderes Delta, is seriously threatened by drainage, pesticides, insecticides and poaching. The pressures from tourism are also considerable. Plans are afoot to build roads and vacation villages throughout the area. In 1992 a multidisciplinary study carried out jointly by Turkey's Society for the Protection of Nature (DHKD) and the World Wide Fund for Nature (WWF) made some preliminary suggestions about conservation measures that need to be taken, such as extending the boundaries of the Dilek national park to the Delta and to Lake Bafa, limiting "wildcat" aquaculture and improving the river basin. An information centre open all the year round distributes documentation to schoolchildren, organizes seminars for teachers and advises tourists about bird watching.

Turtles are less lucky than birds, for they share with people a penchant for beaches of fine sand that slope gently to the sea. Turkey has seventeen main nesting sites for two threatened species of marine turtles, the loggerhead *(Caretta caretta)* and the green *(Chelonia mydas)*, about 10,000 of which are killed (accidentally or intentionally) in the Mediterranean each year. Many of these beaches have extensive dunes; some are coastal wetlands that are also important for fisheries and birdlife. Patara, Belek and Akyatan are sites where the dunes are still intact; the dunes at Anamur were destroyed long ago by illegal sand mining. Most of the sites are affected by this practice and by domestic and industrial pollution.

In 1988 WWF and a number of Turkish universities began an ambitious survey, co-ordinated by the DHKD, of 2,456 km of coastline. The survey originated when a German-Turkish project to build a huge tourist complex on Dalyan beach, which has been a turtle nesting site for millions of years, brought protests from environmentalists in Turkey and from a number of international institutions, including the World Bank. The project was eventually cancelled and the area named a "specially protected area" (SPA). Subsequently a pressure group was formed (including the Ministry of Tourism, several big investors in the tourist industry and the DHKD) to draw up a plan for managing the Mediterranean beaches used by the turtles. A project to build a road along one of the main turtle nesting sites was scuttled thanks to a court decision and a vigorous press campaign.

The hue and cry in the media alerted the public and also aroused the interest of scientists, who began to study the behaviour of the turtles, their choice of nesting places, the number of their young and the size of their population. On Dalyan beach a thirty-five-metre-wide zone was marked off by sign-posts in order to protect the nesting area from bathers. From May to October guards are posted to keep out nocturnal intruders whose lights would disturb the turtles. Other places too, like Fethiye, Patara and the Göksu delta, have been named as SPAs although they have not yet been given any specific protection.

MONK SEALS AND FLOWER BULBS

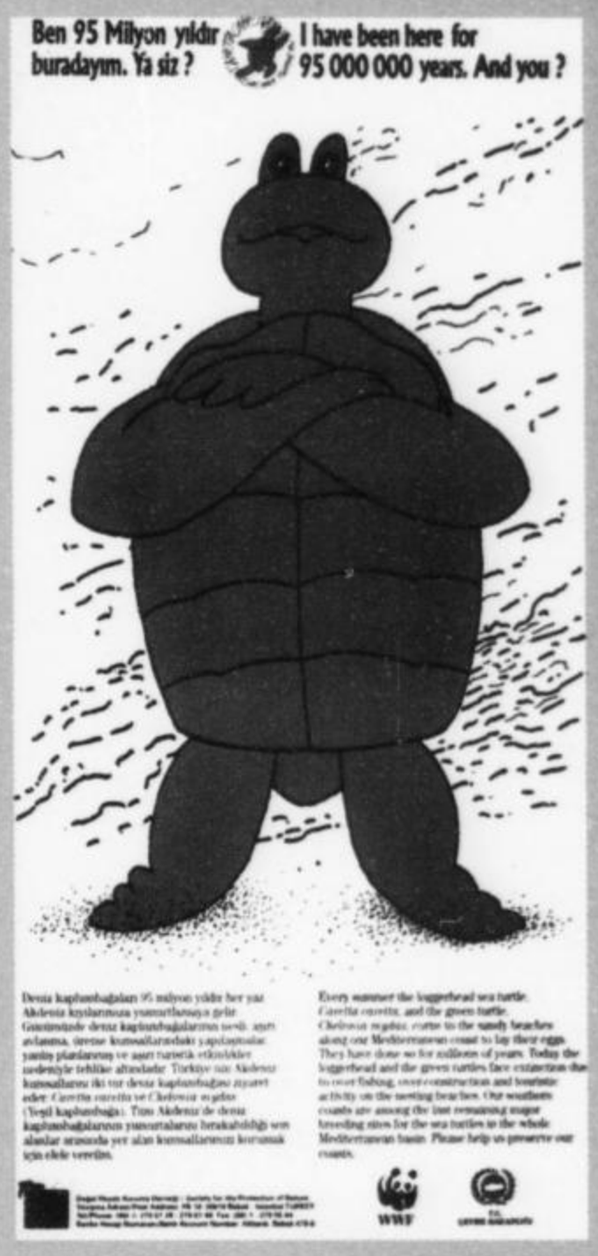
Turtles are not Turkey's only endangered species. There are only about 400 monk seals (*Monachus monachus*) left in the world, and half of them are found in the Mediterranean region of Turkey and Greece. The other half live in the Atlantic. Turkey is a contracting party to the Bern Convention on European Wild Life and Their Habitats and to the

An anemone (right) and a snowdrop (left), two bulb plants threatened by uncontrolled picking for the export market.

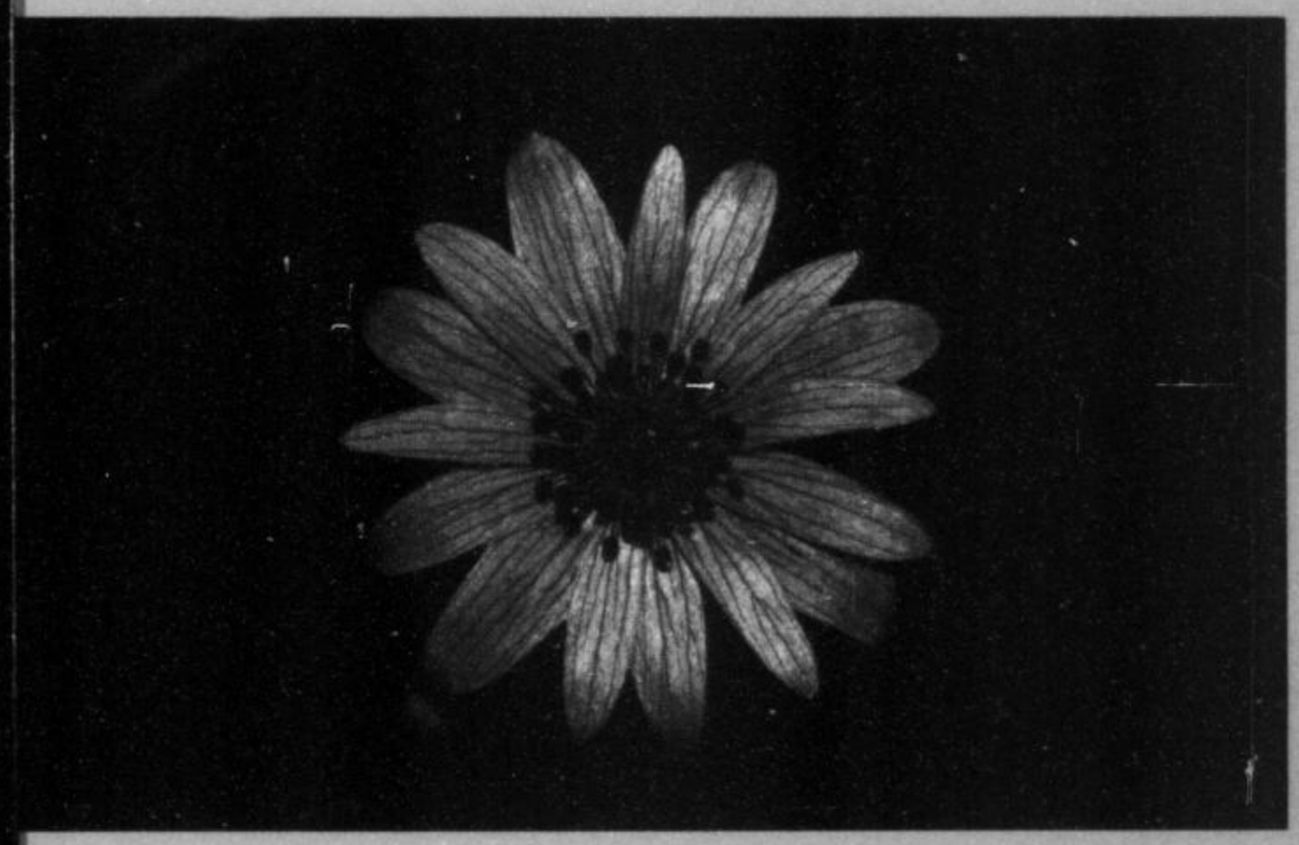
Barcelona Convention for the Protection of the Mediterranean Sea Against Pollution, and its Ministry of the Environment decided to act when the United Nations Environment Programme (UNEP) noted that the number of monk seals was at a critically low level. In 1991 Turkey's National Committee for the Protection of the Monk Seal chose the villages of Foça, on the Aegean Sea, and Yalikavak as pilot areas for the conservation of the species. Field surveys were carried out, educational materials were given to teachers, and brochures were distributed to tourists to encourage them to help to protect the seals' habitats. Artificial rocks were even placed in the sea to prevent fishing boats from coming too close.

Back on dry land, plants grown from bulbs are at risk. Turkey is the world's leading exporter of wildflower bulbs (some 71 million annually in the late 1980s). Uncontrolled bulb-gathering, paid for by big international companies, was endangering the survival of certain species such as the snowdrop, the anemone, the winter aconite, even the *Crocus olivieri istanbulinsis*. The DHKD, the Flora and Fauna Preservation Society (FFPS) and WWF responded by encouraging villagers to produce and market artificially propagated plants.

Turkey is also saddled with other serious pollution problems, mostly due to thermal power plants, the iron and steel industries, petrochemicals and automobile factories. Polluted seas, rivers and soil are also causing concern. In an attempt to find a solution, the Ministry of the Environment is monitoring the import and use of coal, lignite and other fossil fuels, and chemical products. The collection, transportation and recycling of domestic waste have been improved. Lessons on the environment are given in all primary schools. Since 1993 any new tourist or industrial project is legally obliged to include an assessment of its environmental impact. ■



"I've been here for 95 million years. How about you?" asks this sea turtle (*Caretta caretta*) depicted on a poster produced by the Turkish Society for the Protection of Nature and the World Wide Fund for Nature. The turtles are threatened by tourist pressures at their nesting sites.



BIRDLIFE INTERNATIONAL, A WATCHDOG FOR BIRDS

BirdLife International is a global partnership of conservation organizations working for the diversity of all life through the conservation of birds and their habitats. It was launched in 1993, although it built directly on the structure and achievements of the International Council for Bird Preservation (ICBP), which was founded in the United Kingdom in 1922. Its headquarters are in Cambridge (UK), and it has regional offices in Washington D.C. (U.S.A.), Quito (Ecuador) and Brussels (Belgium) and a programme office in Bogor (Indonesia). Among BirdLife's 52 partner organizations, whose combined membership is estimated at 1.5 million, are the Bulgarian Society for the Protection of Birds (BSPB), the Ghana Wildlife Society (GWS) and the Argentinian Ornithological Association of Rio del Plata.

BirdLife's wide range of activities include helping its partners establish priorities, implementing protection measures in the field, taking part in major international conferences and publishing books. It has identified worldwide 221 Endemic Bird Areas (EBAs), places where clusters of birds with restricted ranges are found, in the world and will soon be publishing a directory of them. Publications currently available include *Important Bird Areas in Europe* (2,444 sites), *Important Bird Areas in the Middle East*, Red Data Books giving details of threatened birds including *Threatened Birds of the Americas*, and *Birds in Europe: their conservation status*.

BirdLife's partners are involved in campaigns such as those to protect the Menderes Delta in Turkey, the Spanish steppes, the Da Lat Plateau in Viet Nam, Palas Valley in northwestern Pakistan, coastal wetlands in Ghana and Mount Kupé in Cameroon. In Indonesia, where there are 381 unique bird species and 24 EBAs (more than any other country), BirdLife is working with the Indonesian Directorate for Forest Protection and Nature Conservation to establish two large protected areas (each of 100 km²) on the island of Halmahera, which is still largely covered by virgin forest. BirdLife works to ensure that the Washington Convention on International Trade in Endangered Species (CITES) is respected. Despite all efforts, however, many birds are still being illegally removed from their natural habitats and sold to collectors at exorbitant prices. ■

BirdLife International, Wellbrook Court, Girton Road, Cambridge CB3 ONA, United Kingdom. Tel.: (44-1223) 277-318; Fax: (44-1223) 277-200. E-mail: birdlife@gn.apc.org

WORLD

A TURTLE REFUGE IN SWITZERLAND

Each year between 5,000 and 10,000 tiny Florida marine turtles raised on turtle farms in Louisiana (U.S.A.) are sold in Switzerland as pets. They grow quickly, and when they are too big for the aquariums where they are kept, many of them are released near to ponds or streams. Unfortunately the turtles, which can live for up to 50 years, wreak havoc on the ecosystem by devouring all kinds of aquatic wildlife and even birds' eggs. Now biologist Olivier Lasserre has opened a refuge for abandoned turtles in the canton of Vaud. He has already taken in 200; eventually there will be room for up to 1,300 more. Perhaps it would be a good idea to explain to children who buy the turtles what exactly they are taking on. ■

RECYCLABLE CARS

In Europe today one of every four cars ends up in a junkyard, which not only leads to considerable pollution but is wasteful, since automobiles are almost entirely recyclable. Two French and German auto makers, Renault and Mercedes, have signed a technical co-operation agreement in this field, similar to one already reached between Peugeot (France) and Fiat (Italy). In France, the problem is particularly urgent because in 2002 tips will be strictly reserved for "ultimate" waste products, i.e. wastes that cannot in any way be reutilized. The auto makers have committed themselves to produce cars that will be 85 per cent recyclable by 2002, and 95 per cent by the year 2015. ■

GIANT ICEBERG ALERT

The British Antarctic Survey is monitoring a giant iceberg measuring nearly 2,000 km² (about the size of Luxembourg) that has broken away from the Larsen ice shelf. The iceberg, detected by satellite and confirmed by aerial sighting, is about a thousand times larger than those usually found in this part of the world and could eventually endanger shipping off the coast of South America. It has been suggested that the formation of the iceberg may be a consequence of the 2.5°C average rise in temperature that has occurred in the region in the last half century. ■

GABON'S NATURAL RICHES

The Pan-African News Agency (PANA) reports that Gabon is one of Africa's richest countries in terms of plant- and wild-life. Not counting seaweed and lichen, there are more than 8,000 plant species, more than 600 species of birds and 150 species of mammals, 19 of which are primates, including 35,000 gorillas and 64,000 chimpanzees. With some 80,000 specimens, the elephant population may be the largest and probably the most stable in Africa. Forest, which covers 40 per cent of the country, is still mostly virgin with a deforestation rate estimated at 0.1 per cent per annum. The sea off the 800 kilometres of coastline abounds in fish and shellfish. Ten new fish species, four of which are endemic, have only recently been discovered. ■

RETURN OF THE CACTUS

After a two-year "stopover" in a French arboretum, last February 300 cactus were handed over to the Mexican ambassador to France so that he could return them to their country of origin. The plants, members of a species that figures symbolically on the Mexican flag, were discovered in tourists' baggage by French Customs officials. There has been a steady increase in infractions of the Washington Convention on International Trade in Endangered Species of animals and plants (CITES). In 1994 alone French Customs seized nearly 800 living animals (birds, turtles, snakes and felines), 80 stuffed animals, 119 pieces of African elephant ivory, 1,657 worked-ivory articles and 2,417 articles derived from protected species. ■

Mamady-Keita, one of Guinea's greatest percussionists, gives lessons to children in the village of Balandugu where he was born.

Cultural counterpoint

by Isabelle Leymarie

Differences between cultures find an echo in music

Although children in Europe are usually initiated into music by learning how to read it, children in Africa start by refining their ear, watching adult musicians, copying from them and playing with them as soon as they are able. Drummers often teach their students rhythm by getting them to feel it physically, by holding their wrists to help them keep time, by singing to the beat or beating out time with sounds or rhythmic phrases. All of this helps their pupils to absorb rhythm physically.

In African and Caribbean societies instruments "speak", like the "talking" drums that reproduce through their different timbres the sounds of tonal languages, and make certain rhythms semantically intelligible by modelling them on spoken language. "This is the way it *says*," jazz musicians may say when they describe a virtuoso passage played on saxophone or piano.

The language of rhythm

Rhythm is the strongest distinguishing factor between these different types of music. The West, which highlights correctness of timbre and the rigorous application of the rules of harmony and counterpoint, tries to tame and neutralize rhythm. It is no accident that some European languages, for example, refer to offbeat rhythm (which is,

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incidentally, described in French by a word with a pejorative connotation, *contretemps*) as syncopation, as if rhythmic intrusion can be so intolerable as to lead to a "syncope" or loss of consciousness. It is interesting to remember that when European colonists made contact with Africans, the instrument they often banned and destroyed was the drum, the very symbol of rhythm.

Many kinds of black music use harmony and counterpoint wonderfully, but they also have the highest respect for syncopation. This is not a matter, as in Asian or Arabic music, of precise rhythmic cells, of a predetermined and memorized rhythm respected by the musician or the dancer, but one of skill and personal inventiveness (even within a group of instruments). It is the spontaneous art of escaping from the beat, of playing tricks, being unpredictable, everything associated with the Afro-American slang word "hip" (smart, lively, unexpected) as opposed to "corny" (square, conventional, boring). The downbeat, which is favoured in Western music and corresponds to the rhythm of military music, is considered "corny". The upbeat, which is used in black music, produces the sensation of swing and is considered hip.

The West is disoriented by this conception of phrasing and this cult of rhythm, and is more inclined to admire Indian, Chinese and Japanese ritual music, whose rhythmic and ceremonial qualities seem more directly intelligible to it than African music. Yet Yoruba liturgies, for example, are works of awesome beauty and complexity. In them the *iyá*, the largest instrument in the *bata*, the array of Yoruba holy drums, talks to the gods in dazzling, almost otherworldly rhythms that seem to emerge from the void and are beaten out with amazing precision. Black music also favours "breaks" that modify the beat whenever it slips into a rut.

Abolishing duality

The Irish musicologist John Blacking spent a lot of time among the Venda people of South Africa before he really came to understand their music. He realized that his education had made him consider African art as "different". At first he stayed in his tent listening to Bach or Mozart, but in time he began to change his conception of music. "They [the Venda]," he wrote, "introduced me to a new world of musical experience and to a deeper understanding of my own music." When he regarded music not as a set of rules but as a series of human interactions and a bond between the body and the mind, the distinction between "classical" and "folk" music disappeared. And, he added, "by discovering precisely how music is created and appreciated in different social and cultural contexts, and perhaps establishing that musicality is a universal, species-specific characteristic, we can show that human beings are even more remarkable than we presently believe them to be—and that the majority of us live far below our potential."

An open, global, human approach to music—all music—combining the ear, the eye and, above all, the heart, would do away with this duality that locks us in our solitude and prevents us from appreciating cultures different from our own. Other peoples and cultures are an essential part of our world, and if we cut ourselves off from them we shall the poorer for it. ■

FURTHER READING

Dr. Guy Bérard, *Audition égale comportement* ("Hearing Equals Behaviour"), Maisonneuve, Metz, 1982.

Billy Bergman, *Hot Sauces—Latin and Caribbean Pop,* Quill, New York, 1985.

John Blacking, *How Musical Is Man?* University of Washington Press, Seattle and London, 1973.

Dr. Etienne Jalenques, *La thérapie du bonheur* ("The Therapy of Happiness"), Michel Laffont, Paris, 1993.

NICOLAE BREBAN

talks to
Edgar Reichmann

Nicolae Breban (born 1934) is one of Romania's finest novelists. During the last years of the communist dictatorship he lived in Paris, returning to Bucharest after the December 1989 revolution. Today he is editor of a leading cultural review, *Contemporanul*. His novels include *In absenta stapinilor* ("In the Landlords' Absence"; 1966), *Bunavestire* ("The Annunciation"; 1977) and *Don Juan* (1981).

■ **What was the situation of fiction in Eastern Europe over the last half century?**

—In Romania as in most of the countries that suffocated for decades under totalitarian regimes, fiction had in the first place to struggle to survive and hold on to its public. It lost its readers in the Stalinist era, when many writers gave in to pressure from the authorities, but by the 1960s things began to change as a result of the clandestine combat they waged against censorship, against the bureaucracy and even against certain fellow-writers who had become the dictator's yes-men. Battle was joined firstly by poets, then by critics, essayists and novelists. Romanian literature, like that of many other countries, is now out of the rut and is gradually winning back its readers.

■ **Some people nevertheless consider that culture in general and literature in particular are still in crisis.**

—Romania as a whole is in crisis, an economic and social crisis, an institutional crisis, a crisis of confidence and of course a crisis in culture, in literature and in the novel, but a crisis is not necessarily a bad

thing: it can be seen as a sign of vitality and renewal, the first step towards profound changes that need to be made. The transformations my country is going through at present, spectacular though they are, are vastly preferable to the socially lifeless, brain-dead state in which it existed for decades.

■ **What could poets and novelists do in those days?**

—Creative artists had to obey the peremptory directives issued by the authorities, who made use of the publishing houses—all strictly state-controlled—to oblige them to conform to the fatuous criteria of so-called "socialist realism". Bookshops were flooded with Soviet-inspired works in praise of the "positive hero", the "new man", a mythical creature that existed only in the minds of the communist leaders. Many creative artists, and not minor ones either, totally renounced their intellectual freedom and independent judgment, placing themselves at the disposal of the authorities and glorifying "the collectivization of agriculture", "the class struggle" and "the heroic traditions" of a communist party that scarcely existed before Romania was overrun by the Soviet army.

There were a few great Romanian authors, notably the philosopher and poet Lucian Blaga, the novelist Hortensia Papadat-Bengescu, and the poets Gheorghiu Bacovia, Ion Barbu and Vasile Voiculescu, who chose to remain silent, the only form of resistance that was possible under the Stalinist terror. They are now dead, but each of them left behind a body of work.

Some younger writers, who were drawn into politics at the end of the 1940s, were misled by the regime's slogans into believing that Romania's brutal incorporation into the Soviet bloc was the country's liberation and marked the dawn of a better world, a world of greater justice. Eventually they realized their mistake and came into conflict with the authorities.

■ **Did Romanian writers' resistance take specific forms?**

—Whereas in other countries a joint struggle was organized on the basis of political demands, in Romania resistance took individual forms. Each author had to defend his or her own writings against the censorship exercised simultaneously by the party, the publisher and the fearsome political police who in the 1950s used a whole battery of measures such as the banning of books, the blacklisting of authors and the imprisonment of recalcitrant writers.

In the 1960s, when the regime was trying to make itself more popular as well as to establish its legitimacy, it finally abandoned these brutal practices in favour of other forms of pressure. Authors were forced to join the Writers' Union, which was the only institution empowered to remunerate authors and grant them various perquisites, depending on how subservient they were. Some of them were thus able to travel, with authorization from the political police, to western Europe. There was a positive side to these trips abroad insofar as they helped to raise writers' awareness and bring them face to face with new situations.

In the mid-1960s, taking advantage of a short-lived thaw, writers began to demand independence of the regime and to protest against its interference in their work. The Writers' Union gradually emerged from state supervision to become a professional body of sorts, trying to protect authors' rights and the integrity of their works.

This slight change for the better did not last, but novelists and poets made the most of it to free themselves from the rules imposed on them and win a certain degree of freedom in matters of aesthetics and form; but the ban on any political demands or any challenge to the system remained in place. Novelists were required to practise self-censorship. This apparent renunciation of any social mission and the ongoing game of hide-and-seek with the apparatus

of repression did much to stimulate writers' ingenuity and imagination by fostering a distancing process that was propitious to novel-writing.

These innovative aesthetic endeavours constitute—albeit against a background of tragic events—what may be a unique phenomenon in modern literary history. Provided the dictatorship was not attacked, it allowed writers a certain amount of elbow room and lifted the "socialist realism" edict. Any writer infringing this compromise arrangement was punished with a publishing ban or with exile. While novelists as a result became less pugnacious, their writings gained in depth. This was the age of metaphor and allegory, a real head-ache to the publishers, censors and bureaucrats in the ideological employ of the tyrant.

■ **How was this new strategy for writing novels reflected in your works?**

—How does someone become a tyrant? This was perhaps the underlying meaning of "The Annunciation", a 700-page novel I published in 1977, when the short-lived Romanian thaw was only a faded memory. Although denounced at the time as "anti-socialist" and "obscene" by the country's top-level authorities, it won the fiction prize awarded by the Writers' Union. A kind of political Annunciation—whence the title—emerged from the cruel depiction of a lethargic provincial community, as if a second novel, hidden from view, was tunnelling its way through the first before bubbling up to the surface. The novel's hero, Grobei, a truly archetypal personification of mediocrity, undergoes a strange metamorphosis, to become a charismatic figure who is prepared to exploit the masses in the name of a ramshackle ideology. The duality of the novel's structure reflects the dual nature, the ambiguity, of this character.

For the purposes of this Romanian-style "childhood of a leader", which had the ambitious aim of exposing the origins of a political myth, I deployed a wide range of narrative techniques, not attempting to hide my taste for the baroque and the tongue-in-cheek use of clichés. Did my compatriots have a special gift for tolerating the abuses of absolute power? This may be the question hidden in this story, which combines the features of an allegory, a novel of manners and a satire on a desensitized society, ready to accept any sleazy compromise. The book's hidden meaning did not escape the attention of the regime, which explains the virulence of the criticism to which it was subjected. Its publication was held up for a long time by the censor, and soon after it came out I left Romania and went to live in Paris, where I stayed until the collapse of the dictatorship in December 1989.

■ **To what tradition of novel-writing do you claim to belong, now that authors in your country have regained a freedom of expression unimaginable only a few years ago?**

—I would be hard put to say to which literary line of descent I belong. I no longer believe in reductionist labels like "modernism", "realism", "post-modernism", "oneirism", "surrealism" and so on. I only believe in the durability and vitality of the novel, a major, universal genre and an essential factor in communication, whatever techniques novelists may wish to use. I am naturally somewhat taken aback to see Western literature awash with slim intimist volumes, trivial confessions, novels and opuscules that are not without charm, that are sometimes intelligent and exquisitely crafted but have little to contribute to the debate on issues of the day that readers, adrift in this rapidly changing world, so urgently need. I still feel nostalgic for novels that raise problems and cause readers to change their ways of thinking, as epitomized, to my mind, by the works of Thomas Mann, *The Magic Mountain* in particular, and the whole of Dostoevsky's work.

The theorists of the "nouveau roman", as widely practised in France thirty years or so ago, declared character and plot to be dead; the cold eye of the novelist was all that mattered. I, on the contrary, believe that narrative and character, without which there are no novels deserving of the name, are alive and well. I would even go so far as to assert that not only is the novel the basis of universal culture but that the character remains the novel's mainstay—the story, the plot, as well, of course, but above all the character, with his or her internal divisions. In "The Annunciation", as in my other novels, I often tried to bring about this kind of break with my heroes' type-casting. The unity of the hero of a novel, like that of real-life characters, is always made up of contradictions. Nothing is ever entirely black or white. No one has understood as well as Dostevsky the multicoloured nature of the human soul, at times detestable and at other times sublime. ■

EDGAR REICHMANN is a writer and literary critic.

Correction: On page 24 of our April 1995 issue ("The origins of writing"), the first sentence of the third paragraph of Shiro Noda's article "A four-in-hand script" should have stated "It is generally agreed that Japanese writing dates back to the fifth century A.D.", and not "the fifth century B.C.", as printed. We apologize to readers for this error.

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A UNESCO programme

Education for the Prevention of Aids

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UNESCO/WHO pilot projects in school-based Aids education, adapted to the socio-cultural context, have been undertaken and evaluated in different regions of the world.

RESOURCE CENTRES

An Aids School Education Resource Centre (ASERC) for the collection, exchange and distribution of educational materials for school-age children has been set up at UNESCO Headquarters. This Centre has over **2,500 publications** and close to **150 video films** from all over the world. A regional centre has also been set up for Asia and the Pacific (AIDSED Centre) at UNESCO's regional office in Bangkok.

PUBLICATIONS

Bibliographies and selective extracts of didactic materials are regularly published. Pedagogical guides and prototypes of educational material have also been devised.

TRAINING SEMINARS FOR DECISION-MAKERS

UNESCO organizes regional planning seminars to strengthen awareness among high-level officials from ministries of education on the need for HIV/Aids education and to inform them about effective preventive education strategies. This approach aims primarily at urging decision-makers to promote school-based education for the prevention of Aids.

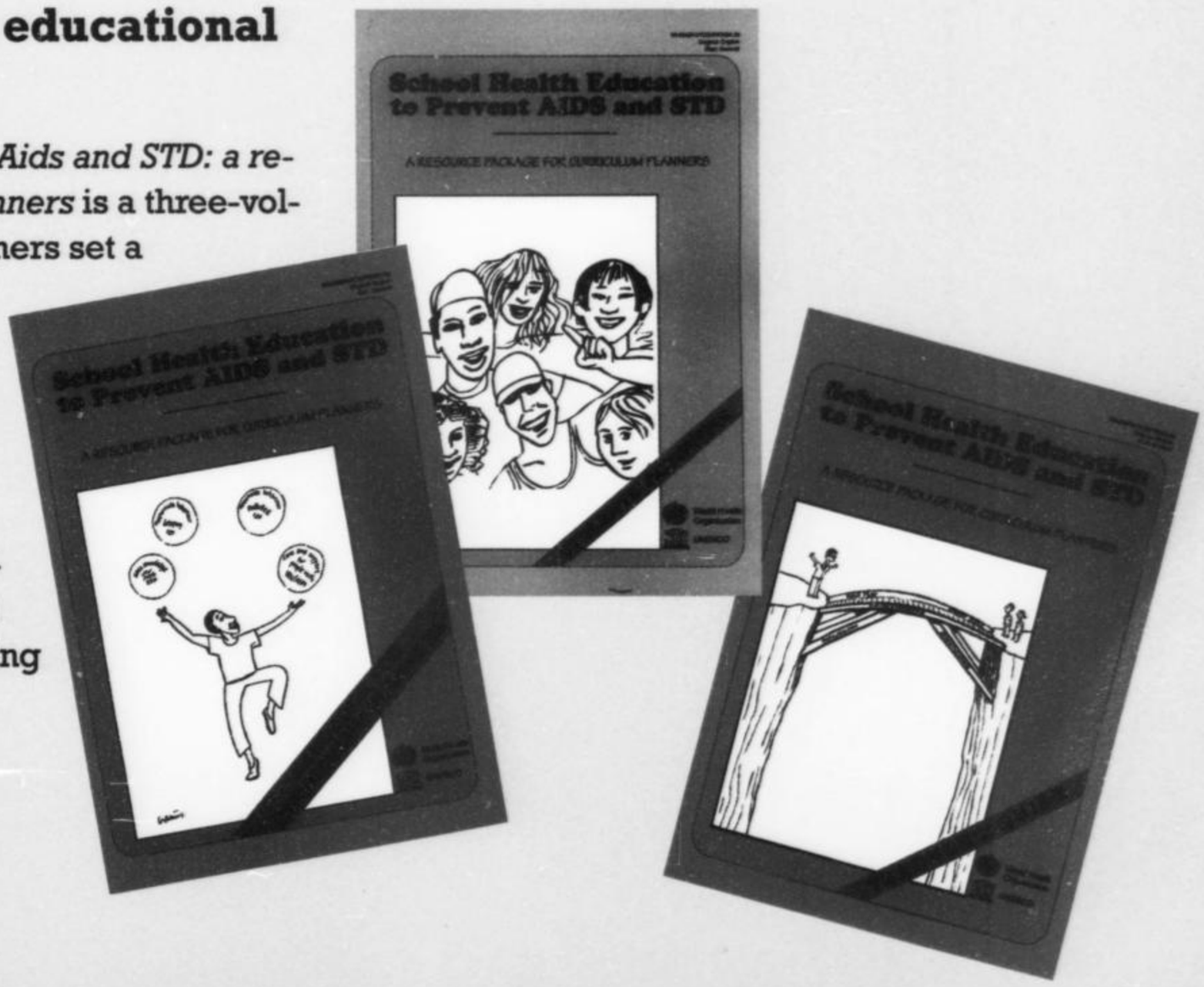
UNESCO documents may be obtained free of charge by contacting:

Education for the prevention of Aids
UNESCO
7 Place de Fontenoy
75732 Paris 7 SP, France

Tel.: (33-1) 45 68 09 29
Fax: (33-1) 47 83 27 10

A resource package for educational programmes on Aids

School health education to prevent Aids and STD: a resource package for curriculum planners is a three-volume guide to help education planners set a curriculum and develop materials on Aids and sexually transmitted diseases (STDs) for pupils aged 12-16 and their teachers. It incorporates all the elements of sex and Aids education programmes that were found to be effective in pilot projects conducted by WHO and UNESCO in developing countries in 1989-93.



THEME OF OUR JULY-AUGUST 1994 DOUBLE ISSUE:

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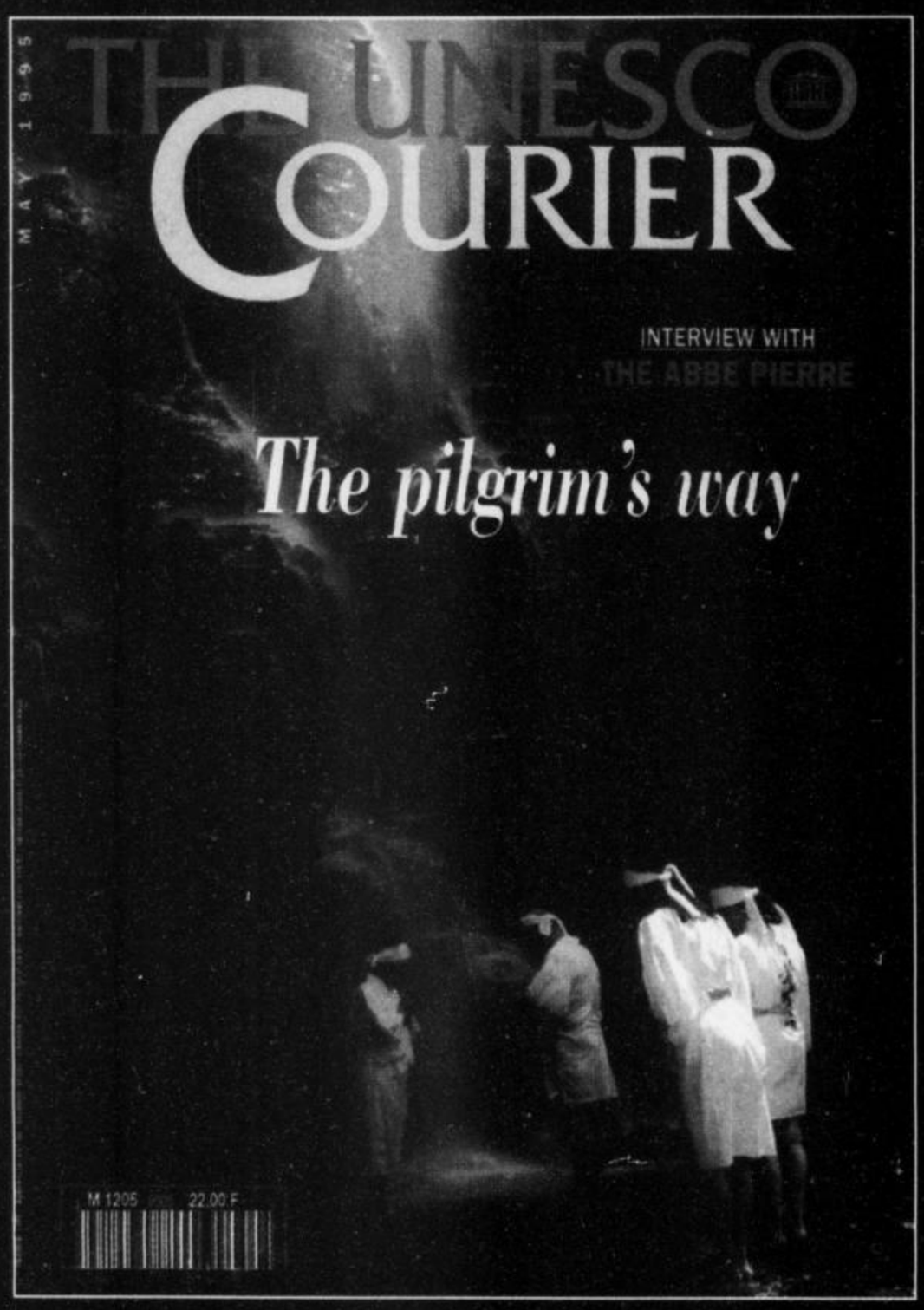

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